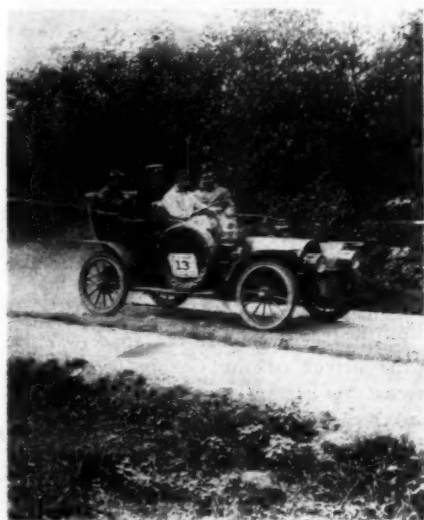


THE AUTOMOBILE

NEW ENGLANDERS HAVE REAL 24-HOUR STRUGGLE



Franklin Which Carried No. 13.

BOSTON, Sept. 30.—There have been Glidden tours that needed several days and many miles of added driving to eliminate the winners from big fields of starters, but no endurance run of the one-day type has ever required so gruelling a postscript of road plugging to evolve a winner as has that of the Bay State Automobile Association, which started last week Wednesday night, September 23.

Nine of the 21 cars evolved with perfect scores in the original run from Boston to Bretton Woods and return, which started Wednesday night at 10 o'clock and concluded the following evening with the contestants having been on the road 22 hours and 15 minutes for the 386-mile journey, though some of the cars covered more than 400 miles by going astray.

These were the perfect score cars: Franklin, Studebaker, Marmon, Oldsmobile, two Shawmuts, Reo, Buick, and Lancia. The

clean-score cars were immediately locked up in the White Garage and the drivers and entrants notified to meet Friday at 2 P.M. at the Bay State clubhouse. It was then decided that the battle would be continued to a finish. Two contenders then withdrew.

Tied Cars Reduced to Four in Number.—BOSTON, Sept. 26.—While the winner was decided in the first day's run-off, which was accomplished partially in a fog, only four finished the day without a mark, these being the Franklin, Studebaker, Marmon, and the Shawmut runabout. The unfortunates were Lancia, Oldsmobile, and Shawmut tourer, all of them meeting with mishaps.

One Out on the Second Run-off.—BOSTON, Sept. 28.—In the second run-off from Boston to Portland and return, 240 miles, F. E. Wing's Marmon lost a wheel in a ditch near Wells. The Studebaker, Franklin, and Shawmut have covered 958 miles.

None Out on Third Day Continuation.—INTERVALE, N. H., Sept. 29.—Without mishap of any kind, the Franklin, Studebaker, and Shawmut tied trio arrived here to-night via Portland, Poland Springs and Fryburg. According to the drivers, the day's run was the hardest thus far.

The cars are scheduled to leave here at 6 o'clock Wednesday morning for Boston via Crawford Notch, Bretton Woods, Bethlehem, Franconia Notch and Concord. They should finish about 7 p. m.

The original plan was to hold a twenty-four-hour test over the roads from Boston to Bretton Woods, in the White Mountains, and return, and to give the clean score cars certificates of merit. Then a member of the association offered a \$200 cup to be awarded to the winning car, and this made it necessary that a winner be determined. To this end it required that the test be definitely



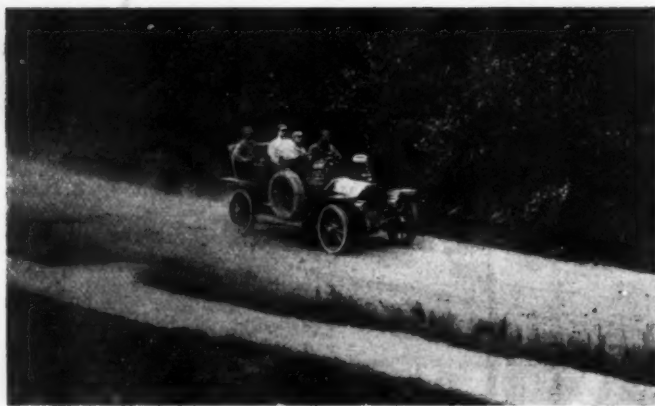
Shawmut Runabout, Church Driving.



Studebaker, W. G. Jones Driving.



Marmon, with Wing at the Wheel.



Oldsmobile Touring Car, Driven by Hobson and Schneider.

continued until but one clean score car should survive. The run started at 10 o'clock Wednesday evening from the Bay State Automobile Association. Of the twenty-two cars that had been entered, twenty-one showed up for the send-off. They were:

Touring Cars.

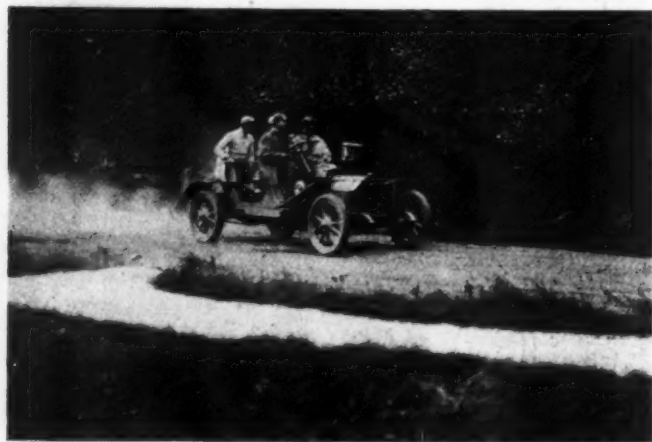
No.	Car.	Entered By.	Drivers.
1.	Pierce	Harry Knights	Harry Knights.
2.	Marmon	F. E. Wing.	F. E. Wing.
4.	Lancia	Hol-Tan Co.	W. M. Hilliard.
6.	Buick	Buick Motor Co.	W. L. McCain.
7.	Shawmut	Shawmut Motor Co.	Arthur Ayres.
13.	Franklin	Franklin Auto Co.	Carrils and Burns.
14.	Studebaker	Studebaker Auto Co.	W. G. Jones.
15.	Cadillac	A. T. Fuller.	H. L. Smith.
16.	Oldsmobile	Algonquin Motor Car Co.	Hobson and Schneider
19.	Stevens-Duryea	J. W. Bowman Co.	G. Canterbury.

Runabouts.

No.	Car.	Entered By.	Drivers.
3.	Buick	A. H. Waitt.	A. H. Waitt.
5.	Lancia	Hol-Tan Co.	Harry Fosdick.
8.	Shawmut	Shawmut Motor Co.	Harold Church.
9.	Overland	Frank Wentworth	Frank Wentworth
10.	Overland	Frank Wentworth	H. Dorr.
11.	Chalmers-Detroit	Whitten-Gilmore Co.	Oliver Light.
12.	Rambler	T. F. Jeffery & Co.	E. W. Williams.
17.	Corbin	Corbin Motor Co.	S. T. Goss.
18.	Overland	Mrs. Mabel Stearns.	Mrs. Mabel Stearns.
22.	Buick	Buick Motor Co.	C. H. Coakley.
23.	Reo	J. M. Linscott Co.	Fred Pratt.

The confetti car was a Knox, and the official cars were a Stevens-Duryea and a Royal Tourist. Each competing car carried an observer, and there were checking stations at Rochester, 90 miles from Boston; Bretton Woods, 182 miles; Concord, 283 miles, and Boston, 359 miles. At Bretton Woods an hour and a half stop for luncheon was made, and it was permitted that the motors be stopped. The time of arrival of the first car in Boston was 8:45 P. M.

Of the 21 starters, 15 finished, and 9 of these had perfect scores. The successful cars were the Marmon, Shawmut, Franklin, Studebaker, and Oldsmobile, in the touring class, and the Lancia, Shawmut, Reo, and Buick in the runabout division. The Franklin was the only air-cooled car in the test and it went



Lancia Runabout, with Harry Fosdick at the Wheel.

through with flying colors. The Lancia engine was sealed, and was not stopped during the entire run. After reaching Boston, Harry Fosdick continued to keep the engine running until it had been in operation for a complete 24 hours.

The Pierce car, driven by Harry Knights, was a 1906 type that he had driven previously over 30,000 miles, and it suffered only a two-point penalization. Going up a long hill near the Profile in the White Mountains, the gas tank failed to feed the carburetor because of low pressure, and the engine was stalled for two minutes. The No. 3 Buick lost five points for stalling the engine before the first control was reached, and another point for similar trouble before the second control. It was not reported beyond Bretton Woods. The Lancia, driven by W. M. Hilliard, was tied up nearly an hour on the outward leg by reason of the carburetor becoming clogged with dust. After locating and remedying the trouble, Hilliard struck a cup race gait and landed in Bretton Woods ahead of everybody else. On the way back the engine stalled, costing the car a slight penalty. The No. 6 Buick had a clean score at Bretton Woods, but after passing Plymouth it had the misfortune to get into a mix-up with a skittish horse, and both automobile and horse were put *hors de combat*, the car being unable to finish.

The No. 9 Overland reached Cambridge with a clean score. Then, when only two or three miles from the finish, in turning out of a car track the car skidded and a wheel collapsed. The No. 10 Overland had varied troubles, and finally quit at Bretton Woods, with 31 points against it. The Chalmers-Detroit also was unfortunate. Carburetor trouble cost it 7 points, stalling the engine 7 points, and transmission troubles 82 minutes.

The Rambler had only one point scored against it, the motor being stopped for 25 seconds by dust that clogged the intake valve near Bristol on the return journey. The Cadillac lost 1 point for stalling of the engine, and 21 for being late in Boston. On the way to Boston the driver twice lost the road. While consulting a signboard, the driver of the Corbin accidentally stalled the motor, which cost his car two points. It was stuck in the sand above Concord, and was 17 minutes late at the control. It was also late at Boston. The driver also lost his way.

The only woman in the tour was Mrs. Mabel Stearns, of York Harbor, Me., at the wheel of an Overland. She lost 27 points to Bretton Woods, and was not reported thereafter. The carburetor, a stalled motor, and gas pipe troubles accounted for her bad score. The Stevens-Duryea, after passing the Rochester control, sprung a leak in the gasoline tank, and the gas all disappeared, leaving the car stranded in the woods. After much delay the hole was plugged, and sufficient gasoline was obtained to bring the car back to Boston by the route it had followed on the outward trip.

The official cars had their share of trouble also. The confetti car had magneto trouble near Rochester, and the confetti was taken up by the Stevens-Duryea, which carried it the rest of the way, making all controls on time and having no trouble. The Royal Tourist was often delayed by tire trouble. The roads were very dusty, which interfered with the engines and stung the eyes and faces of the drivers and passengers. Owing to the protracted drought also, the roads were very rough, and the passengers and observers in the rear seats had a hard trip.

The official result of the first day's run was as follows:

No.	Car.	Entered By.	Penalization.
2.	MARMON	F. E. Wing.	Perfect.
5.	LANCIA	Hol-Tan Co.	Perfect.
7.	SHAWMUT	Shawmut Motor Co.	Perfect.
8.	SHAWMUT	Shawmut Motor Co.	Perfect.
13.	FRANKLIN	Franklin Auto Co.	Perfect.
14.	STUDEBAKER	Studebaker Auto Co.	Perfect.
16.	OLDSMOBILE	Algonquin Motor Co.	Perfect.
22.	BUICK	Buick Motor Co.	Perfect.
23.	REO	J. M. Linscott Co.	Perfect.
12.	RAMBLER	T. J. Jeffery & Co.	1 point.
1.	PIERCE	Harry Knights	2 points.
15.	CADILLAC	A. T. Fuller.	31 points.
17.	CORBIN	Corbin Motor Co.	25 points.
4.	LANCIA	Hol-Tan Co.	74 points.
11.	CHALMERS-DETROIT	Whitten-Gilmore Co.	96 points.
3.	BUICK	A. H. Waitt.	Did not finish.
6.	BUICK	Buick Motor Co.	Did not finish.
9.	OVERLAND	Frank Wentworth	Did not finish.
10.	OVERLAND	Frank Wentworth	Did not finish.
18.	OVERLAND	Mrs. Mabel Stearns.	Did not finish.
19.	STEVENS-DURYEA	J. W. Bowman Co.	Did not finish.

MILWAUKEE'S "24" WON AGAIN BY LOCOMOBILE

MILWAUKEE, Wis., Sept. 27.—For the second time the Locomobile has won the annual 24-hour Milwaukee track race, a 40-60-horsepower roadster, driven by Bob Drach and Fred Leiser, finishing first in the long grind which was contested Friday and Saturday on the State Fair Grounds track. The Locomobile ran up a total of 992 3-4 miles and led a 20-horsepower Mitchell by a big margin, the Racine machine recording 808 3-4 miles. Third was the White Steamer, with 712, while the Midland was fourth with 693 1-2. The Buick runabout had 519 3-4 miles. Three other cars started—a two-cylinder Jackson, a four-cylinder Maxwell, and a Petrel, the last a new friction-drive production.

Conditions were different from those of last year, for the two-car team proposition was abandoned and instead it was a one-car race. It was a continuous performance, too, there being no intermission for short distance races as was the case at Brighton Beach. Interest in the affair at the start was centered in the Locomobile and the White, this being the first appearance of the later in a 24-hour race.

The Maxwell was an important factor at the start. It jumped into a duel with the big Locomobile and fought every inch of the way for the first 45 minutes. Then it ran into the fence in the backstretch and was down and out with a punctured radiator and a broken flywheel. Then the Mitchell became aggressive, and at the end of the first hour it had the honor of leading the field. The Locomobile then warmed to its work, and at the end of the second hour was on even terms with the Mitchell, finally pulling away, and was never headed thereafter.

Only two accidents marred the race, the Maxwell and the Jackson being the sufferers. The latter went out at 8 o'clock Saturday morning, when it crashed into the fence on the first turn. No one was injured in either accident.

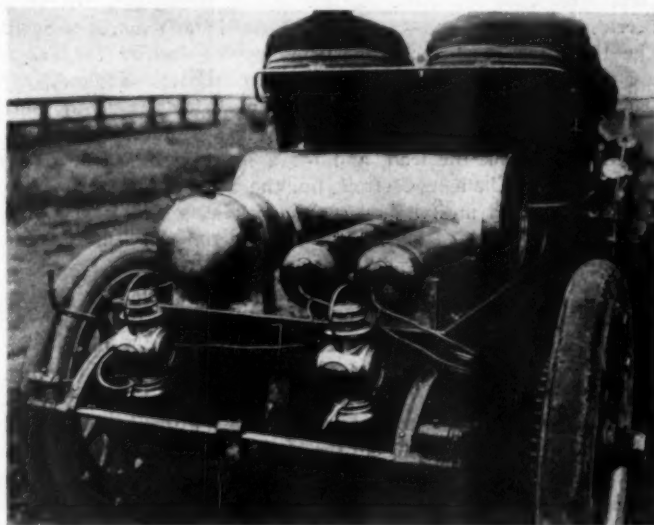
Compliments of all sorts were handed out to the hard-working officials of the Milwaukee Automobile Club for the manner in which they handled the big race. Apparently nothing had been overlooked and there wasn't a hitch from start to finish. Forty-four officials, counting the reliefs, were on duty, with Chairman Dearholt, of the racing board, and Secretary Drought "on the job" from start to finish. The club scored an innovation by securing twenty members of the state militia for guards and well did they do their work, no one but officials or contestants being allowed on the track, while at the paddock passes were necessary in order to get past the dead line.

The arrangements for checking the progress of the race worked perfectly, the milage being recorded by means of street car registers, the same as was done last year. Each car had a register and as it finished a lap an attendant pulled a string, which rang a bell and recorded the mile.

The track and grounds were lighted by Avery gas tanks, there being 150 of them in service. On the track these were placed at about 35-foot intervals, with a common wash basin acting as a reflector. They were so turned that they flashed the light ahead, so that the drivers were not blinded by the light.

Every car in the race was allowed to put on extra gasoline and oil tanks, which technically violated the racing rules as regards

stock cars. The Locomobile had its extra tanks on the rear, all of them big brass affairs which made the car resemble a chemical fire engine. The gasoline tank held 22 gallons, and there was a 6-gallon oil tank and two acetylene gas tanks, making a formidable battery. Like all the others two tail lights, fed by acetylene gas, were used. The White steamer just doubled its water and fuel capacity, the first by means of a 6-foot affair which was placed on the running board and looked like an extra-long tool box. In addition there was a gasoline tank on the rear of the chassis, which gave the White a capacity of 40 gallons of water and the same in gasoline. It was this extra equipment that proved the undoing of the steamer. This was the first 24-hour race in which it ever had taken part and its



Fuel Tank Arrangement on the Winning Locomobile.

entrants were not prepared for it. F. W. Gregory of San Francisco entered the car and it was shipped here from Denver, where it had been a contestant in the Labor Day road race. It only got here the day before the race, and there was no chance to try it out. When it did get into the actual race it was discovered that the two extra tanks seriously interfered with the draught system, necessitating frequent stops because of overheating of the burners.

The Mitchell carried a 35-gallon gasoline tank, while the Buick had an extra 5-gallon tank. The Maxwell had 15 gallons "up its sleeve." The Midland carried an extra 10 gallons as well as 5 gallons of oil. The Jackson packed 8 extra gallons of gasoline and 3 gallons of oil.

Fisk demountables were fitted to the Locomobile, Mitchell and White, while the Midland and Buick had Firestones. Good-years were on the Jackson and Ajax on the Maxwell. The demountables proved great timesavers, fast work being done in changing. As an instance of the speed possible a right front on the Loco was changed in 1 minute 20 seconds.

HOW THE CONTESTANTS PROGRESSED AND FINISHED IN THE MILWAUKEE 24-HOUR RACE.

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CALIFORNIANS HAVE A TRACK MEET.

SAN FRANCISCO, Sept. 21.—The holding of the second annual track meet of the Olympic Club proved even a greater success, as far as records and enthusiam is concerned, than was the initial event of last year. The races were held on the Tanforan race track Sunday, September 20, and passed off without an accident to mar the sport. Over three thousand persons motored to the track, which is located in San Mateo County, a few miles from this city, and extra trolley cars and a special train conveyed large crowds, until fully 10,000 were on hand.

The best time of the day was made by the White steamer, when it encircled the mile track in 1:02. The fastest five miles made by any of the cars was scored by the Stoddard-Dayton, when it covered the second five miles in the third race in 5:31, and the fastest ten miles was made by the same car in the same event, making the entire distance in 11 min. 11 2-5 sec.

In the five-mile handicap race for members of the Olympic Club, three cars faced the starter. M. L. Rosenfeld, driving a Peerless, won in 6:07 1-5, with M. Boas, in a Thomas, second. The third race for stock cars listed at the factory for \$2,750 and under, was participated in by four starters—a Stoddard-Dayton, driven by Wiseman; a Chalmers-Detroit, with Bert Dingley at the wheel; a Buick, and a White steamer. The Stoddard-Dayton took the lead, and for a little while was worried greatly by the Chalmers-Detroit, but the Stoddard-Dayton gradually drew ahead until it had a safe margin, which it kept, the Buick coming in third and the White fourth. The time of the winning car was 11:11 2-5.

In the 10-mile race for stock cars listed at \$1,500 and under, Howard, in a Buick, was the winner. Time, 12:10 2-5.

The sixth race was the most exciting event of the day. Bert Dingley sent the Chalmers-Detroit ahead at the drop of the flag, followed by the Stoddard-Dayton. For over two miles it was a close struggle, but the Stoddard-Dayton in the third mile passed the Chalmers-Detroit, and held the lead to the end. Time, 11:25.

In the race for stock cars listed at \$3,500 and over, there were three starters—a Thomas, Peerless and a White steamer. The White took the lead and held it to the end. A 60-horsepower Thomas touring car held second place until the fourth mile, when the Peerless got by it. Time, 12:16.

In the ten-mile free-for-all, a White, two Comets and a Stoddard-Dayton faced the starter. The latter took the lead at the start, with the Comet close up. The White looked like a winner, when suddenly something went wrong with the generator, necessitating its withdrawal from the race. The Stoddard-Dayton finished first, with Cooper's Comet second. Time, 11:23.

ANOTHER CUBAN ROAD RACE IN FEBRUARY.

HAVANA, CUBA, Sept. 22.—Another great automobile road race is on the eve of promotion by Havana enthusiasts. The date at present tentatively chosen is the early part of February. This will not only follow the close of the running races, but will be near to the height of the West Indian and Floridian resort seasons. The Cuban Automobile Association, which is behind the project, has secured the promised co-operation of Governor Magoon and the local authorities. The agitation for another international race is somewhat due to letters from Thomas Francis Moore, of New York, identified in the promotion of the Briarcliff race, and W. J. Morgan, who was instrumental in getting up the two former Cuban contests, urging a renewal of the international contests of 1906 and 1907. These gentlemen promise to give the race wide publicity and to bring over from the United States crack cars and drivers. E. W. Dennison, secretary of the Publicity League of Cuba, is interesting himself in the project.

Arrangements are being made to raise a prize guarantee fund. This time it is proposed to run the race on a 28-mile circuit instead of a straightaway stretch, as was done in the former contests. This is made possible by the extension of the good roads system in this province.

STEARNS WINS A BERKSHIRE CLIMB.

PITTSFIELD, MASS., Sept. 26.—The hill climbing contest held under the auspices of the Berkshire Automobile Club this afternoon over the State Road Boulevard, up Snake Hill and South Mountain, was brought to a close without a serious accident. For three hours the road was closed to the public and over two thousand people assembled to watch the many cars and motor cycles negotiate the difficult turns. The feature event, the free-for-all, open to cars costing from \$2,000 to \$3,500, was won by a Stearns, with Phillip Rosenbaum, of Florida, at the wheel, in one minute and 47 seconds. Crotty and Holbrook of Great Barrington, in a Jackson, came second, in two minutes.

In the race for touring cars, costing \$4,000 or under, a Pierce Arrow, driven by J. M. Carey, was first in two minutes and seven seconds. The Stanleys had it their own way in the steam car event, G. P. Hunt, of Pittsfield, winning in 2:54.

SIXTEEN ENTRIES FOR FAIRMOUNT PARK RACE.

PHILADELPHIA, Sept. 30.—Sixteen cars, which was the maximum number decided upon by the Quaker City Motor Club, have been entered for the 200-mile Founders' Week road race in Fairmount Park, Saturday, October 10. Several late comers had to be told that their entries could not be made. Here is the list:

Car.	Cylinders.	H.P.	Bore.	Stroke.	Entrant.	Driver.
Am. Locomotive	6	60	4 3-4	5 1-2	L. J. Bergdoll	Bergdoll
Maxwell	4	28	4 1-4	4 1-4	Maxwell-Briscoe Co.	Kelsey
Stoddard-Dayton	4	34.5	4 3-4	5	Hamilton Auto. Co.	Miller
Peerless	4	38	4 7-8	5 1-2	P. F. Du Pont	Maucher
Palmer & Singer	6	60	4 3-4	5 1-2	C. A. Schroeder.	Wallace
Apperson	4	48.4	5 1-2	5	Phila. Auto. Co.	Davis
Weich	6	51	4 5-8	5	E. R. Bergdoll	Bergdoll
Studebaker	4	38.5	4 3-4	5 1-4	Studebaker Co.	Yerger
Locomobile	4	40	5	6	L. J. Morse	Tracy
Locomobile	4	40	5	6	L. J. Morse	Florida
Acme	6	45-50	4 5-8	5	Acme Motor Car Co.	Patchle
Chadwick	6	50	5	6	J. M. Munyon, Jr.	Harkins
Pennsylvania	4	38	4 3-4	5 1-4	Penna. Co.	Zengle
Lozier	4	45	5 1-4	5 1-4	Herm'n Brill	
Lozier	6	50	4 5-8	5 1-2	W. B. Herbert	
Pullman	4	40	4 15-16	5 1-4	York Motor Co.	La Roche

When the subject was first discussed among the members of the Quaker City Motor Club very little encouragement was given the leading spirits, as it was supposed that it would be impossible to secure permission from the municipal government and the Fairmount Park commissioners to conduct an automobile race over a course which included not only the driveways of the park, but also two blocks of city streets.

From the first Mayor Reyburn gave the project his hearty support, and the park commissioners were no less enthusiastic after being convinced that the race could be run safely.

WAVERLEY PLANT HAS NEW OWNERS.

INDIANAPOLIS, IND., Sept. 28.—An important change in the automobile world took place when the Waverley department of the Pope Motor Car Company was sold to H. H. Rice, manager, and W. C. Johnson, assistant manager, of the Waverley department, representing a syndicate of Indianapolis capitalists, who purchased the property, merchandise, patents, good will, and business of the plant. The new concern will be known as the Waverley Company, and will devote its entire time to the manufacture of the Waverley electric carriages and trucks. These officers have been elected: President, W. B. Cooley; vice-president, H. H. Rice; treasurer, Carl von Hake; secretary, W. C. Johnson.

Herbert H. Rice entered the employ of the Pope Manufacturing Company in Boston in 1892, taking charge of the advertising department, where he wrote the first advertisement ever published for Colonel Pope's automobile factory. In 1895 he moved to Hartford with the sales department, and three years later took charge of the Providence branch. Since 1904 he has been at the head of the Waverley branch.

CORBIN WINNER OF SOUTHWEST RELIABILITY

KANSAS CITY, Mo., Sept. 26.—Victory in the Southwest reliability tour for the *Star* trophy perches on the banner of the Corbin, which made the entire eight-day tour of the Automobile Club of Kansas City with a perfect score. After two critical inspections at the finish, following a protest that the rear axle was sprung, the technical committee overruled all objections and awarded to Fletcher Cowherd, Jr., the entrant, the massive silver cup which is the trophy for which thirty-one cars contested.

A close second was a Rambler roadster, which finished with a score of 994. Eight other cars topped the 900-mark, and a few points against Corbin could have deprived it of the cup.

In the absence of observers there is a well-grounded suspicion against some of the high scores. It may be truthfully said, however, that the Corbin is open to no such criticism. For the first four days this car was almost constantly under the eye of *THE AUTOMOBILE* man, and for the other half of the tour, when perfect scores were few, the car was too closely watched by the other contestants to be able to break any rule without being detected. The refreshing fact stands out that not a voice has been lifted in depreciation of the Corbin. It made a clean fight, and finished under the rules with the best score. At the finish of the tour to-night the score stood:

No.	Miles.
13—CORBIN	1,000
31—RAMBLER	994
39—KNOX	989
16—CADILLAC	980
37—FRANKLIN	975
2—STEVENS-DURYEA	960
10—OVERLAND	952
3—PEERLESS	935
27—MAXWELL	932
21—CHALMERS-DETROIT	921
35—FORD	898
20—CHALMERS-DETROIT	896
15—PACKARD	886
9—STUDEBAKER	868
17—MAXWELL	723
7—POPE-HARTFORD	667
14—MAXWELL	479

The run really was a series of eight-day-tests, instead of an eight-day contest, as scheduled. At night the cars after check-

ing passed into the hands of their drivers, and the garages can tell the tales of repairs, replacements, and rebuilding that went on sometimes until within an hour of the time to check out in the morning. This, however, did not count against the car, provided it could pass the night inspection at the time of checking in. As this inspection was not very rigid and did not go under the bonnets or past the grossly noticeable defects of a car, the penalties imposed under it were not very severe. The distance was almost 1,000 miles.

A Claim from the Brush Regarding Its Score.

DETROIT, MICH., Sept. 30.—Driver Huss, who drove the Brush runabout in the Kansas City endurance run, claims his score should be 777. After completing the run and being officially checked out, he states that he was informed that he had been disqualified because of his arrival at the Eureka control, Friday, three hours late. Huss could not find any checkers, and so informed the committee, which told him to continue according to schedule the following day, but later pronounced him disqualified through failure to check in. His lateness at Eureka was caused by losing his way, after going for help to assist a disabled car containing a woman and child. Including his Eureka penalties, his total loss of points aggregated only 223.

HARTFORD CLUB LOSES AN ABLE WORKER.

HARTFORD, CONN., Sept. 28.—G. K. Dustin, secretary of the Automobile Club of Hartford and the Connecticut Automobile Association, has tendered his resignation to President Fuller, as he is leaving the State to take up his new duties in the position of chief engineer of the Susquehanna Railway, Light and Power Company. Mr. Dustin while in Hartford was superintendent of the Hartford Gas Works and also an enthusiastic worker in automobile circles, as the present condition of the local organization testifies. The new secretary has not yet been chosen, though several names have been suggested.

CAN RUN ENGINES IN COMMERCIAL SALON.

PARIS, Sept. 24.—Permission has been obtained from the Prefect of Police of the Paris district to allow gas engines to be run in the Grand Palais during the second Salon, to be held next December, for commercial automobiles only. In past years the commercial vehicle and machine tool section of the Paris salon has always been held in a temporary building in which it was possible to run the largest gas engines and have most of the machinery in motion without risk of fire. It was feared that permission would not be granted for this in the Grand Palais, an elegant structure dedicated to fine arts, and one of the most valuable buildings in the city. Special precautions will be taken, however, against the outbreak of fire.

The total number of exhibitors at the Paris Salon is 696, and the maximum space allowed each firm is fifty-three square feet. In the industrial section Americans will be represented by all the leading machine-tool makers; in the pleasure car show the firms having secured space are Ford, Buick, Rushmore, B. F. Goodrich Company, and Vacuum Oil Company.

MAY BE POSTPONED BECAUSE OF DUST.

INDIANAPOLIS, IND., Sept. 28.—Unless there is rain within the next forty-eight hours it is probable that the two days' reliability run scheduled for October 1-2 will be postponed until there is rain. The run, which is to be under the auspices of the Indianapolis Automobile Trade Association, is to be to French Lick and return.

SAN FRANCISCO AGED GIVEN AN OUTING.

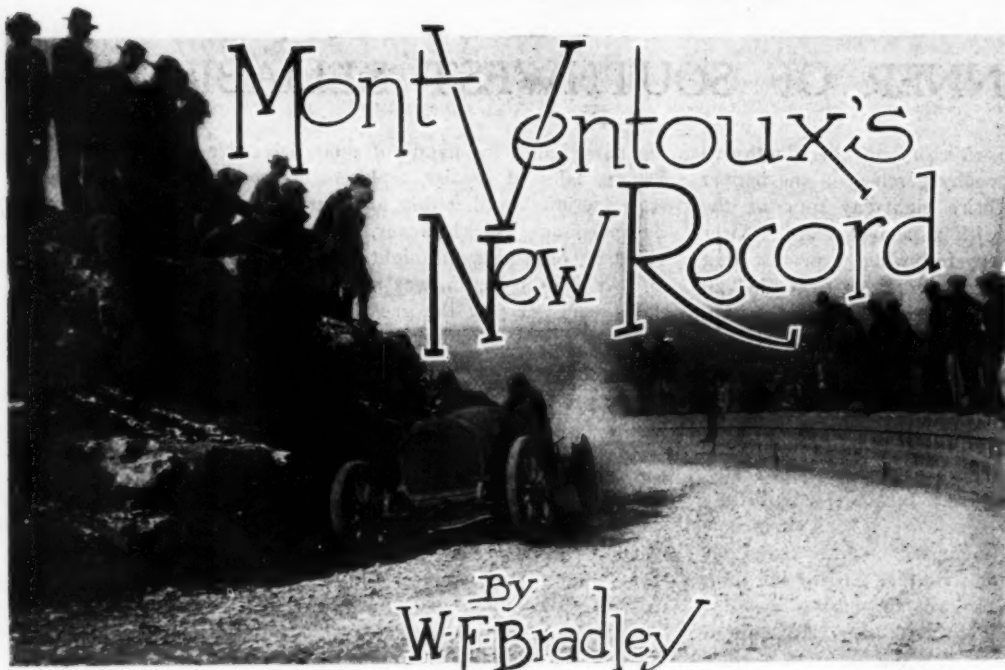
SAN FRANCISCO, Sept. 17.—Through courtesy of the California Women's Automobile Club, 150 aged inmates of San Francisco's public institutions were taken for an outing to-day in thirty-four donated automobiles. This is the second event of this kind that has taken place in San Francisco. Many of the occupants of the cars were helpless paralytics, or very frail. Dr. A. J. Minaker gave his careful attention to the scores of invalids. The cars assembled at the Ocean Beach, and proceeded along the boulevard to the residence of Mrs. Fremont, who had offered to Mrs. Frederick J. Linz, president of the club, refreshments for her guests.

ATTACK UPON INDIANA ROADS LAW.

INDIANAPOLIS, IND., Sept. 28.—An attack on the three-mile road law, enacted two years ago, is being made in the Indiana Legislature, which is now in special session in this city.

The law provides that upon the petition of fifty property owners in a county, a road not exceeding three miles in length shall be built, providing it connects two other improved roads. It is further provided that the expense shall be equally divided among all of the property owners in the county.

Recently a number of towns and small cities have taken action under the law to improve streets by paving them with brick and other materials. While the residents of these cities and towns have had to pay for country roads, the farmers are objecting toward sharing in the expense of improving city streets.



Contestant Cutting a Corner a Bit Too Close on the Mont Ventoux Course.

AVIGNON, FRANCE, Sept. 22.—After standing for three years, the record for the Mont Ventoux has been broken. In September, 1905, Cagno covered the 13 miles on a Fiat in 19 minutes 13 seconds. This year Bablot started from the valley on a Grand Prix Brasier and climbed to the observatory, more than 6,000 feet above the sea level, in the record time of 19 minutes 8.4-5 seconds. Conditions were far from being at their best. On starting out the roads were so dry and hard that non-skids were not required; half way up there was a complete change, the mountain road being covered with a thin layer of melted snow that gave little hold for smooth tires. At this point Bablot had a lead of two minutes on the Fiat record, and would doubtless have maintained it had he been equipped with steel-studded tires. Under the unfavorable conditions, a little time was lost, but this did not prevent the Brasier clipping 41-5 seconds off the record.

Mont Ventoux is more than an ordinary hill climb, its length alone putting it in a class by itself. From the starting point to the observatory the distance is exactly 13.04 miles, with a gradient reaching as high as 20 per cent., certified by the government surveyors. Added to the difficulties of the grades are right angle and hairpin turns with rough surfaces overhanging precipices that are unprotected by either wall or hedge. There are difficulties of carburetion, too, the start being in the warm air of the southern valley, the finish around a snow-capped peak. Nevertheless, the 155-millimeter racer realized an average of close on 50 miles an hour.

In the stripped touring car class two minutes were clipped off the record by Deydier on a Cottin-Desgouttes, which roared up the mountain side in 22.23-5, the motor being a 140 millimeter four-cylinder.

Conditions were so unfavorable that several of the competitors requested that the climb should be postponed, and on

ing larger sprockets, a V-shaped wind shield in front of the radiator, and a sheet metal covering for the space between the dashboard and the steering wheel.

Bayard-Clement Captured Most of the Honors.

The best time made by the six-cylinder Bayard-Clement on the flying kilometer was 221-5 seconds. Though both performances are good, they do not come near the record of Hemery on the eight-cylinder Darracq of Florida fame. In the touring car classes entries were plentiful, but categories were poorly filled, with the result that competition was not of the keenest, though it can be said the events were fairly interesting.

Alezy and his long, bonnetless six-cylinder Bayard-Clement, which first roared in 1906, made the fastest time on the five kilometers, standing start, his official time being 1 minute 52 seconds, equal to an average of 97 miles an hour. Bablot's Brasier occupied 1 minute 54 seconds to roar down the same poplar-lined band of perfect macadam, which was used as the course:

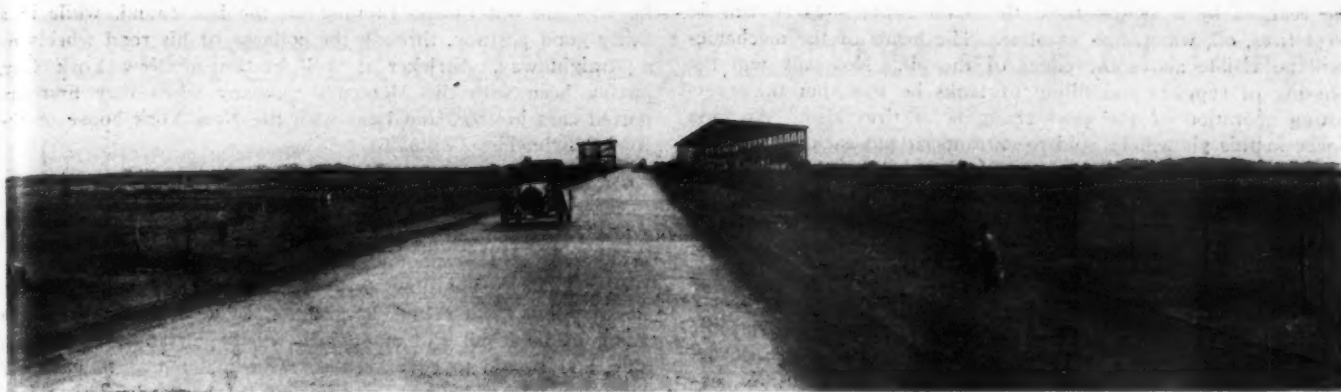


Alezy in Bayard-Clement Finishing 5-Kilometer Run at Salons.

the organizers refusing to accede, declined to start. No accident happened, however, the only scare being provided by Mottard on a La Buire, who swung round on himself at the St. Esteve bend and appeared for a second in danger of diving over the precipice.

Salons Straightaway Tests.

Most of those taking part in the Ventoux climb also figured in the straightaway tests at Salons two days previous. Here Bablot and his Brasier shared the honors with Alezy mounted on a 1906 Bayard-Clement six-cylinder racer. The Grand Prix Brasier covered the flying kilometer in 212-5 and in 214-5, giving an average of 213-5, equal to 1031-2 miles an hour. The car was the one which the same driver handled at Dieppe, the additions for the occasion be-



Here is Where the Storm Centre of the Great Vanderbilt Cup Race Will Be Located, and Speed in Plenty Will Be Seen.

VANDERBILT CUP CERTAIN TO RESULT IN NEW SPEED RECORDS

WHEN the list finally closes for the 1908 Vanderbilt Cup race, scheduled for October 24, it is a certainty that the entries will exceed the total in any previous event for this famous trophy. One thing is a certainty, and that is, that those that see this year's race are going to witness probably the limit obtainable in automobile speed, for the unlimited bore cars will extend themselves faster than ever before over the perfect surface of the Motor Parkway, which has been supplemented by adjoining roads placed in as good condition as is possible to make a State highway.

While the entries at first fees close in the mail of to-morrow morning, there will still be opportunity for the late comers to enter at double prices, though not more than twenty-five are likely to be permitted to start.

For the opening of the Motor Parkway itself, Saturday, October 10, a most generous entry has been made for the several sweepstakes, rolled into one as far as the onlookers are concerned, insuring the most pronounced kind of a success for the introduction of the first automobile speedway constructed.

On Tuesday Paul LaCroix nominated a Renault for the Vanderbilt Cup race, and the Matheson Motor Company named a Matheson. The day before had come a trio of entries of imported cars. W. K. Vanderbilt, Jr., designated a Mercedes; Foxhall P. Keene, another Mercedes, and Harry Payne Whitney, a Brasier. This, with the Graves' Mercedes and the Brokaw Isotta, raised the foreign division to six, and placed it only one behind in number with the American contingent, which on Tuesday was made up of two Knoxes, a Chadwick, an Acme, a Thomas, a Matheson and a Mora.

Wednesday's entries included a second Matheson and word from Bridgeport that the blanks for the two Locomobile racers had been placed in the mail. This gave a total of ten American and six foreign cars.

It now looks as though the struggle among the high-speed ma-

chines of the millionaire automobile racing contingent would be far from the least interesting feature of the great struggle.

Up to Saturday night a week before the date set for the closing of the entries for the Motor Parkway Sweepstakes, twenty-four paid nominations had been made in the five classes, into which the race is divided. The representation was as follows: Mitchell, four; Stoddard-Dayton, three; Knox, two; Chalmers-Detroit, two; Isotta-Fraschini, two; Pennsylvania, two; Palmer & Singer two; Garford, one; Allen-Kingston, one; Moon, one; Maxwell, one; Lancia, one; Hotchkiss, one; Gyroscopic, one. The entrants, who manufacture or handle makes of several prices, had not given, as a rule, notice of their segregation of cars in the various price classes.

The sweepstakes promise to be by far the most novel and at the same time most exciting struggle yet conceived for automobiles. The idea practically combining five races in one, by starting the five fields at once, is a radical innovation that will probably become a feature of future stock car racing in this country. The large number of contestants will insure cars constantly racing and passing one another all along the course. The distances for the various classes differing, there will be added after the first three hours the excitement of successive finishes for the \$1,000 prizes offered each prize division. The subdivisions of the sweepstakes are:

Motor Parkway sweepstakes, for cars selling above \$4,000; distance 10 laps, or 250 miles.

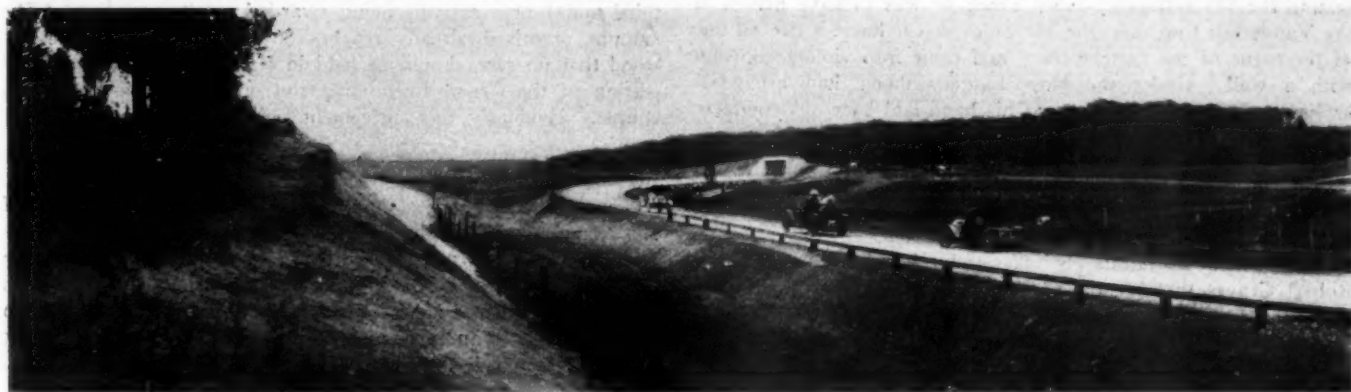
Meadowbrook sweepstakes, for cars selling from \$3,001 to \$4,000; distance 10 laps, or 250 miles.

Garden City sweepstakes, for cars selling from \$2,001 to \$3,000; distance 8 laps, or 200 miles.

Jericho sweepstakes, for cars selling from \$1,001 to \$2,000; distance 6 laps, or 150 miles.

Nassau sweepstakes, for cars selling for \$1,000 or under; distance 4 laps, or 100 miles.

Spectators on the homestretch will be treated to a noteworthy innovation in the establishment of a depressed official supply station stretching for 300 feet in front of the grandstand. It will take the form of a pit 10 feet wide and 5 feet deep, and will



Where the Long Island Motor Parkway Passes Under the Main Highway Near Central Park.

be reached by a switch from the main course. Here will be kept tires, oil, water, and gasoline. The heads of the mechanics will be visible above the edges of the pit. Not only will the passing of supplies and filling of tanks be seen, but the interesting operation of the quick-changing of tires also. Working space in this pit will be sold to entrants at \$10 each. They will be compelled to keep their gasoline in sealed five-gallon cans and hand them to the drivers in that shape. No gasoline will be permitted to be fed under pressure, and no smoking allowed.

There will be another official supply station established on the backstretch somewhere along the old Jericho turnpike. It will not, however, be depressed. The supply men will be separated, though, from the course by a railing. In neither of the races can supplies be taken on elsewhere than at these official stations. No tires can be replaced except at these stations, except those whose tires have been thrown between stations and an extra tire has been carried on the car.

A novelty is to be tried in connection with the Motor Parkway Sweepstakes in the admission of touring cars to the cement stretch with the privilege of parking along the course. They will only be barred from the outside of curves and bridge crossings where there is danger of racing cars plunging into the crowd. Touring cars seeking these parking advantages will be admitted to the cement stretch between daylight and 8:30 A. M. They can enter by the toll lodge at Meadowbrook, or by either of the toll lodges at Bethpage and Massapequa. An admission fee of \$10 will be charged. Tickets may be obtained from the uniformed toll-keepers, or in advance at the offices of the Vanderbilt Cup Commission, No. 437 Fifth avenue, New York City.

The grandstand, which is being built on one of the main stretches of the cement parkway, is nearly completed. It will seat 5,000 spectators. It is divided into nine sections, each section containing 34 boxes, or 306 in all. These boxes are along the edge of the course. Behind them rise tiers of seats to the roof. The latter will afford protection against the sun or rain. Should there be rain, by the way, there will be no necessity for a let-up of speed along the homestretch, as the cement is broomed to make skidding impossible.

Three-quarters of a mile on the old Jericho turnpike is being resurfaced. The dangerous "Flatiron turn" at the Jericho turnpike and the Woodbury road is being rounded for safety. A new road is also being built across Hempstead Plains to the beginning of the parkway. It is three-quarters of a mile in length and eighteen feet in width. Twenty-two thousand gallons of oil are to be spread on the fourteen miles of county and State roads included in the Vanderbilt circuit.

Equipment houses are beginning to offer big money to drivers. The Michelin Tire Company, for instance, will give \$1,000 to first, \$750 to second, and \$500 to third in the Vanderbilt, providing the cars winning those places are shod with Michelins.

Lautenschlager Victim of Accident.

STUTTGART, Sept. 25.—Lautenschlager, the winner of the Grand Prix of the Automobile Club of France, has met with an accident which may prevent him racing again this season. While testing the 155-millimeter racer which he was to have driven in the Vanderbilt Cup race, the Mercedes driver burst a tire on one of the turns of the factory track and came into violent collision with a wall. Under the blow Lautenschlager had his wrist broken and most of the bones of his hand laid bare. A complete rest of one month has been ordered by the doctors, but it is doubtful if the Mercedes tester will be able to take the wheel of a racing car at the end of that time.

Emil Stricker, Mercedes Pilot, En Route.

PARIS, Sept. 24.—Emile Stricker, who has been engaged by Robert Graves to drive the Jenatzy Mercedes in the Vanderbilt Cup race, has sailed for New York. Stricker, who was born in Germany thirty-one years ago, went to the United States at the age of fifteen, and later became a naturalized American, has figured in the last two French Grand Prix races. In the race at Dieppe last July, where he piloted a six-cylinder Porthos car,

he was put out of the running on the last round, while in a fairly good position, through the collapse of his road wheels on a straightaway. Stricker is well known in New York City, having been with the Mercedes company when they first imported cars in 1898, and later with the New York house of the Rochet-Schneider Company.

ENTRIES FOR SAVANNAH'S GRAND PRIZE.

The American end of the Grand Prize race was given a boost on Tuesday by the announcement that Harry A. Lozier had entered a Lozier. The noteworthy feature of the nomination was the fact that the machine in question is not a stock car, but a racing machine out and out, which was begun at the factory in June, and is said to have been so far completed as to have for some time been subjected to tuning up on the road. This raised the American contingent of candidates to four, a Locomotive, an Acme, and a B. L. M. having previously been formally entered.

The foreign contingent had a day or two earlier been strengthened by the entry by the Kaiserlicher Club of Germany of two Mercedes, one to be driven by Salzer and the other by Poegge. Previous foreign entries were three Fiats and two Benz.

The same day the announcement was made of the entry of another Buick for the light car race at Savannah, raising the number of candidates to ten, the other nominations being three Maxwells, three De Dions, and two Gyroscopes.

FOURTEEN CARS IN BRIGHTON 24-HOUR.

For its second 24-hour race at Brighton Beach, which takes place on Friday and Saturday of this week, the Motor Racing Association has secured 14 entries, with a possibility of the number being increased by two more when the starter gives his getaway signal at 8 o'clock on Friday night. Of the contenders in the last race, the Lozier "six" and "four," the Stearns, the Fiat, the Allen-Kingston, the Simplex, the Acme, and the Garford have been again entered. Harry C. Houpt has nominated a six-cylinder and a four-cylinder Thomas. Paul LaCroix, whose Renault was wrecked by an accident in the last race, has nominated two Renaults. Walter C. Allen has announced that the drivers of the Allen-Kingston will be Crane, Rippigill, and Tod Sloan, the ex-jockey. Patschke will take Strang's seat on the Acme. An entirely new entry is the Cleveland. Louis Chevrolet, who was a star track driver in the days of Morris Park and Yonkers, is named as its chief driver, with Miller and McCann as alternates. A Zusta has been entered.

Short races are scheduled to be run to-morrow afternoon.

ITALY TO GIVE BIG CASH PRIZES IN 1909.

BOLOGNA, ITALY, Sept. 25.—Satisfied with the excellent results of the races just held, the Automobile Club of Bologna will next year hold a race under the prevailing Grand Prix regulations—whatever they may be—and will offer special attractions in the form of \$40,000 cash prizes. The decision was arrived at at the closing banquet of the recent meet, when a subscription list was opened for next year's event. First prize will be \$10,000, second, third and fourth arrivals being awarded smaller amounts. The amount promised already reaches \$6,000. It had been understood that no race should be held in Italy next year, the second edition of the Grand Prix being run on the Belgian Ardennes course. Evidently this agreement will not be adhered to.

MANN LEAVES HOTCHKISS FOR DELAUNAY.

PARIS, Sept. 25.—J. J. Mann, European consulting engineer of the American Automobile Association racing board, who has been prominently connected with the Hotchkiss Company since 1902, left that firm a few months ago, and since then has been taking a rest, demanded by the state of his health. Mr. Mann has just taken up an engagement with the automobile department of the Delaunay-Belleville Company, at St. Denis, near Paris, and will have full charge of the foreign selling branches. Mr. Mann will shortly visit America.

HORSE-POWER RATINGS OF AUTOMOBILE MOTORS*

BY THOS. J. FAY, PRESIDENT SOCIETY OF AUTOMOBILE ENGINEERS.

INDIRECTLY, a torque curve is the equivalent of an indicator card. However, if the card is available, it becomes possible to note why a motor fails to perform up to the normal. If the card can be had, the formula will read as follows:

$$H.P. = \frac{PLAN}{33,000}$$

in which

$H.P.$ = the indicated horse-power;

P = the mean effective pressure;

L = the length of the power stroke in feet;

A = the area of the piston in square inches;

N = the number of the power strokes per minute;

In a single-cylinder motor, of the four-cycle type, there will be one power stroke for every two revolutions, hence, if the motor is of the four-cylinder type, there will be one power stroke for every revolution. The number of the power strokes then may be found as follows, for any number of cylinders in a four-cycle motor:

$$N = \frac{C}{4} \times S \text{ in which}$$

C = the number of cylinders;

S = angular velocity of the crankshaft in r.p.m.

In this formula the compression is taken into account, in that the mean effective pressure P , involves the same element. It will be observed, however, that the result is in indicated horse power, instead of actual horse power. The losses in the motor are not taken into account in this case and since they are of considerable moment, besides being difficult to ascertain in the absence of the brake test the method does not spell finality. Up to the present, in this discussion, the idea of predicting what the rating of a gasoline motor should be in horse power, assuming a four-cycle motor, was uppermost, but it cannot be claimed that the methods disclosed availed much by way of accuracy.

If the four-cycle motor will not lend itself to the problem, it is not believed the two-cycle motor will stand for any prognostication at all, as the variables in the latter are much more difficult to arrange. In the two-cycle motor, the compression (cold) means very little, because it is impossible to say to what extent the mixture is contaminated as a result of the speed.

Even in the four-cycle motor, the mixture is far from free of burnt residue, though the conditions are extremely good as compared with the two-cycle motor. If a formula cannot be devised that will serve for the four-cycle motor, it will be a waste of time to try to devise one for the two-cycle type. In the main, it is not essential to success to predetermine the exact power, because, if experience dictates that a certain size of motor will serve a certain purpose, it becomes a matter of the construction of the motor to meet the conditions to be satisfied.

If the ability of a motor cannot be predetermined with satisfying certainty, the natural question is: How can this ability be established in actual practice? In fixing upon this, the question will also arise as to whether it is to be the highest instantaneous value, or the average value, involving enough time to fix upon the latter with certainty. The Prony brake affords a means of determining the instantaneous value of the power, but it is not believed this method serves if a considerable time factor intervenes, due to the difficulty involved in disposing of the heat into which the energy is converted. A superior means, affording a long time run, involves a dynamo and the requisite instruments. Certainly there is a material difference as between the power of a motor as it is observed by means of a Prony brake, and the power average of fixed time readings for a long interval of time.

The instantaneous brake readings are likely to be influenced by the flywheel effect, and it is possible to so adjust the carbureter

as to produce results that cannot be maintained for a long time. It is also possible to so time the spark as to influence the readings in favor of a high rating, if it is not necessary to maintain that adjustment for a long time. The cooling question is also one that has a bearing upon the matter, the power of a motor being affected by the temperature of the motor. If a motor is quite small, and the Prony brake is very well designed, it may be that a considerable degrees of success can be realized, but the best that the Prony brake affords is not nearly so good as the results following the use of the electrical system of testing.

While the various instruments of precision, and the general equipment used in testing, will be treated in detail in a special chapter, it may be well here to note that the Prony brake is of the absorption dynamometer genera, and depends for its success upon its ability to absorb and dissipate the heat equivalent of the mechanical effort of the motor. This heat absorption, and especially the after dissipation, is generally attended with considerable difficulty, since if the temperature increases over much, the brake shoes do not behave in a manner to admit of steady readings.

Some Prony Brake Data.

The Prony brake consists essentially of a set of brake shoes, of any suitable design, attached to a lever arm (usually counter balanced), with a means of adjusting the tension of the brake shoes and a suitable scale for weighing in pounds the force exerted at the end of the lever arm.

The customary length of the lever arm is 5 feet 3 inches for the following reason:

$$SP$$

$$H. P. = \frac{SP}{1,000}, \text{ in which } S = \text{angular velocity of the crank-}$$

shaft, if the brake shoes are attached to a drum that rotates at the same speed as the crankshaft, usually the case; P = the pull in pounds at the radius of the lever arm, usually 5 feet 3 inches, as before stated. If the length of the lever arm differs from that given, the formula must be altered to suit. For any other length, the formula becomes:

$$2RSP$$

$$H. P. = \frac{2RSP}{33,000}, \text{ in which the symbols are of the same}$$

values as before given.

The brake drum should preferably be of the same diameter as the flywheel, on the ground that cast iron (the usual material) will not be safe to use of a greater diameter, provided the flywheel is of the maximum allowable for cast iron. At all events, it will not be desirable to use a cast-iron brake drum of a diameter so great as to fix the peripheral velocity in excess of about one mile per minute, at the normal speed of the motor. Even this would be a high value in some cases, involving motors with relatively large valves. The drum must be water-cooled, and for good results it is desirable to maintain the water at a constant temperature, which can only be accomplished by running water through the jacket of the drum. It might also be well worth while to have the brake shoes water-jacketed.

The brake shoes to serve the purpose have to be faced with some material that will have a nearly constant coefficient of friction, notwithstanding the severe changes in temperature, which is a matter of some concern, since but few materials seem to serve with any degree of satisfaction. Cast-iron brake shoes with cork inserts would probably come nearer doing the work than any other means. Certainly leather, or any other material that carbonizes, would not serve at all. With the cork inserts in the shoes, the question of cast iron to the same would not come up, and for a given diameter (fixed by considerations of safety) of the brake drum, the face of the shoes (slightly less than the face of the drum) would be as follows:

*Continued from page 430 of "The Automobile," September 24.

$W = \frac{350 \text{ by } H. P.}{V}$, in which W = the width of the shoes in inches; $H. P.$ = the probable maximum horsepower of the motor; V = the peripheral velocity of the brake drum in feet per minute, which for convenience might be fixed at 5,000 feet.

For a 50-horsepower motor with a 22-inch brake drum, the face would be as follows: $W = \frac{350 \text{ by } 50}{5,000} = 3.54$ inches;

the drum might well be four inches, thus affording a little margin.

The above will only hold true if cork inserts are provided in the brake shoes and with the water maintained at a fairly constant temperature. The scales might all be of the beam type, of the better grade, with the arm graduated to quarter pounds, or finer. The means for putting tension on the brake shoes should be quick-acting and operate by minute increments. Indeed, it is in connection with this detail of the design that most Prony brakes become so very troublesome as to debar their use, unless for the most crude and unreliable tests. With a crude method of altering the pressure, the shoes chatter and the scale readings become a mere guess.

The speed in r.p.m. cannot be taken by means of an ordinary speed counter, a calibrated tachometer being absolutely necessary, the finer (dead beat) types giving instantaneous values.

Safety is a matter so much to be kept in the mind's eye that it will not be out of place to call attention to the dangers to be encountered in the use of the Prony brake. In a cast iron wheel, no matter what the area of the section of the rim, the centrifugal force, resulting from the speed, will set up a tension in the rim independent of the area of the section.

Speed Should Be Kept Within Bounds.

In testing a motor, while the normal speed may be quite low, the chances of the "free" speed being very much higher are very great. The normal speed of a motor might be, say, 1,000 r.p.m., while its "free" speed might be 3,000 r.p.m. This would be a little unusual, since it seems to be the case, in general, that the best power of a motor lies somewhere near two-thirds of its free speed. At all events, if cast iron is the material of the brake drum, and it is designed for 5,000 feet per minute at the normal speed of the motor, it becomes necessary to consider what would be the result of three times that peripheral velocity.

For cast iron the tension in the rim section would be:

$T = \frac{V^2}{10}$, in which V^2 = the square of the peripheral velocity in feet per second; T = the tension in pounds per square inch.

For the case in point: $T = \frac{250^2}{10} = \frac{62,500}{10} = 6,250$ pounds per square in. $V = \frac{15,000}{60} = 250$ feet per second from 15,000 feet per minute.

Cast iron is a product upon which no reliance can be put beyond a certain point. It matters little that tests showing as high as 35,000 pounds per square inch (tensile strength) can be cited; it is not safe to accept over 18,000 pounds per square inch, nor even this figure in a case of this sort, unless the castings are very good indeed from well-executed designs and in accord with the characteristics of cast iron. Even so, the factor of safety is not quite what it ought to be, while on the other hand, it is not well to reduce the diameter of the brake drum below the possible maximum, considering cast iron. If steel castings are adopted instead, then the diameter might well be at least 24 inches, on the ground of a better performance of the brake.

As it is, the factor of safety is barely three to one, and it is true also that no account has been taken of the fact that the brake drum must survive under severe conditions of service, due to variable pressures and sudden changes in temperature, for, even if the water-jacket is well devised and the attendants look well to the details of the task, the time will come when the drum will be allowed to heat up to the maximum for the work. Perfectly uniform walls of no great thickness will best serve the purpose, in the case of the brake drum, for then the metal will

be of the greatest unit strength, defects will not be so difficult to discover, and the heat will be the more readily disposed of. In designs of this sort, perfect symmetry is of the greatest importance, and at such high speeds the drums must be statically and kinetically balanced, the radii must be liberal, and thick sections of metal should not be directly attached to thin sections.

Some Primary Considerations.

Before motors can be tested, they must be designed and constructed, while the test equipment must also be devised on a basis of the probable requirements. Leaving entirely aside the question of the extent to which precedent may be followed, principles must be uppermost, unless a "Chinese copy" of some motor already built and of known characteristics is the sole product. The motor must be designed specifically for the car it is to actuate. If it is heavy, the car will be heavy in two ways; that is, for two reasons, which may be set down as follows:

(a) The heavy motor will add weight to the car.

(b) The chassis framing must be made rigid and strong in proportion to counteract the ills of the extra weight in the motor.

The power of the motor will be in proportion to the square of the diameter of the piston (bore of the cylinders), will bear some relation to the number of the cylinders, and will, furthermore, be influenced by the stroke. The power requirement is dependent upon the weight of the car, the attainable speed and the wind resistance, which becomes a factor, if the speed is above 20 miles per hour. There are numerous other influences besides, as the road, tires, and the details of design of the car as a whole. The right motor for the purpose then will be the one as follows:

(I) Adequate in point of power for the intended service.

(II) Of the maximum "weight efficiency," without sacrificing stability.

(III) Of the utmost thermal efficiency, consistent with the above considerations.

To have the motor as light as possible, without considering the cost of maintenance, would be as much of an error as to design for the highest possible thermal efficiency without respect for the weight efficiency. It is unfortunate that the thermal and the weight efficiencies are not coincident.

The stroke has an important influence on the two efficiencies, barring the question of compression, and is the topmost factor of control. The short stroke motor is the lightest in weight, while the long stroke motor will show better in point of thermal efficiency. Where to draw the line is a matter that practice has never settled, because in practice the stroke has receded from 12 to 4 inches, and now that it is very short, the tendency is again to increase it. The cost of fuel renders it desirable either to bring about a reduction in its price or to strive for a higher thermal efficiency.

For some years the stroke has held between 7 and 4 inches with but very few over 6 inches. The 1909 cars will be largely of the very short stroke type, mostly with four cylinders and rather high speed, with quite large valves in proportion and a fairly high compression, as automobile motors go. Motors so designed will be light, and the power will be that for a high weight efficiency rather than for a high thermal efficiency. Abroad there is a recession to the lengthened stroke, in view of the hankering for a higher thermal efficiency, since it is in France, Germany and the other Continental countries that fuel is more expensive.

Stroke Length as Influenced by Fuel Cost.

To what extent it is desirable to lengthen the stroke to placate the buyer of the fuel is a matter not so acute in America, because in this country fuel is not so expensive, while on the other hand the roads are not so good. This latter consideration is one of some import, for with inferior roads high weight efficiency becomes the matter of moment. High thermal efficiency, at the expense of weight, is something to consider, if the roads are good. In other words, the amount of fuel used, if the roads are not so good, will be least in the case of the lighter automobile of lower thermal efficiency.

To what extent the stroke is responsible for increased weight,

on the one hand, and increased thermal efficiency on the other hand, is a matter not so easy to dispose of. That the weight will be materially less if the stroke is short goes without saying. The extent to which the short stroke decreases the thermal efficiency, however, is not a matter to be disposed of offhand. Not considering the carbureter, it will be possible to indicate the lay of the land, as the stroke *per se* tends to influence the situation. The curve, Fig. 1, shows the increase in horsepower attending an increase in stroke, with a fixed bore and all other conditions as nearly constant as possible. This curve cannot possibly be regarded as representing an abstract situation, apropos of all motors and of the widest range of cylinder dimensions. It is strictly limited to motors of bores less than 8 inches and over 4 inches. These limits must be applied, because numerous conditions will render themselves manifest if the bore is increased very much, while very small motors are a law unto themselves.

From the curve it would appear as if the very short stroke motors would scarcely afford the ability necessary to render their construction desirable, or may we say profitable. Short stroke motors deliver power on a high plane from the weight efficiency point of view, and it is only relatively that they look so discouraging. To illustrate this situation, it will be necessary to give evidence by way of a weight efficiency curve under as nearly the same general conditions as the author can, in view of the difficulty involved, due to the lack of uniformity of the data extant on this rather important matter.

Results Shown by Power-Weight Curves.

Fig. 2 shows the decrease of weight efficiency, as the stroke is increased, considering a constant bore and a constant piston speed. This is given merely to show the trend, and is quite as accurate as it can be under the conditions governing the comparison of these two factors.

The conclusion to be reached is that the power will be doubled if the stroke is doubled (starting with the shortest stroke in vogue), while the weight efficiency will change to 120 points for the long stroke as compared with 100 points for the short stroke. Thus it would seem to be a good thing to increase the stroke, especially if we look no further. But the increase in points on

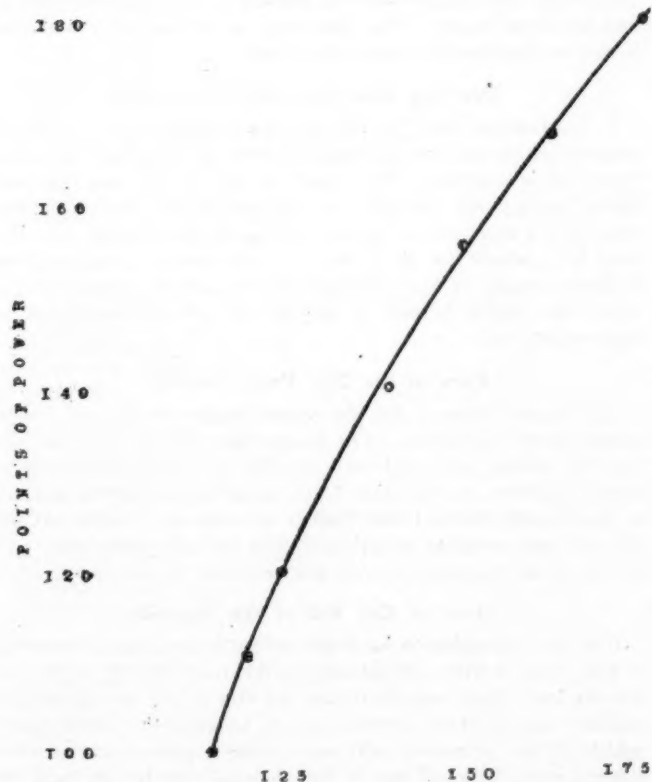


Fig. 1.—Stroke in millimeters for a four-cylinder four-cycle motor bore equals shortest stroke.

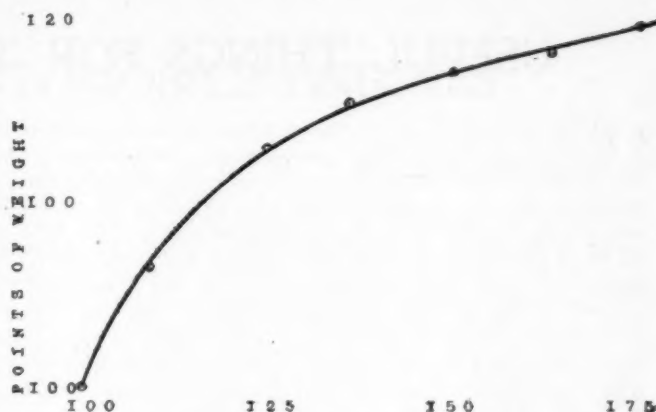


Fig. 2.—Stroke in millimeters for a four-cylinder four-cycle motor bore equals shortest stroke.

the weight efficiency scale means an increase in the actual weight of the motor of 100 per cent. This is vastly more than would obtain for double the power, if that increase were to be effected by means of an increase in bore, rather than by doubling the stroke. Indeed, double the power might result with an increase of 50 per cent in weight by changing the bore and sticking to the short stroke. Obviously, the long stroke is not so valuable, if the car is to be light, nor will the increased thermal efficiency be of such value as to make up for the fuel cost of "toting" the increased weight over the average American roadway.

It is true that the thermal efficiency will be higher in the case of the longer stroke motor, because the scavenging is more complete, and the time per phase of each cycle is greater, the number of oscillations of the mixture in the intake is less, since for a given piston speed the number of changes in direction are reduced. But there are other conditions besides, as for illustration, the timing is more exact, the lag of the spark being considerably reduced, if the stroke is considerably longer. The valve action is sharper, more pronounced, and losses in the passageways are less noticeable. No mention has been made of the differences in mechanical losses, the inertia component of the reciprocating mass, being more pronounced, if the stroke is short, the piston speed being the same for both. This latter consideration will be subject to a correction, if the long stroke motor is designed in such a way as to have massive reciprocating members; very often the case.

It cannot be claimed that the long stroke motor has an advantage on any count involving the initial compression, because it is possible to show that the short stroke motor is amenable to whatever treatment will afford benefits by way of adjusting the compression. It will avail nothing to discuss the question of increasing the piston travel in the long stroke motor, because it is the short stroke motor that best withstands such treatment. Nor is it due to the more complete expansion in the long stroke motor that the increase in power is to be expected. The increase in power is largely due to the more nearly constant compression and the more nearly "flat top" curve of torque. In the short stroke motor the "cold compression" is quite as high as in the motor of the longer stroke, and there is no reason why the initial compression should be less in one than it is in the other.

At the higher speed of the short stroke motor the torque falls off, and it is not so to the same extent in the long stroke motor. It is principally in this regard that the short stroke motor offends, and on this account more than for any other reason, increasing the stroke increases the power.

In spite of all these more or less obvious defects of the short stroke motor, it is very satisfactory in operation, and in more ways than one it has the advantage of a longer stroke. It is something to keep the weight down and more to establish a low center of gravity; it is also desirable to be able to cast the cylinders with the least number of "wasters."

(To be Continued.)

USEFUL THINGS FOR THE AUTOIST TO KNOW

OVER-HEATING of the engine, when not traced to poor circulation, is almost always caused by too much gasoline. There are, however, many possible causes of over rich mixture, some of which on the face of them might seem rather to be causes of lean mixture rather than rich. Prominent among these latter is too low a gasoline level in the float chamber due to the float valve closing too soon. The immediate effect of this is to make the mixture too lean at starting and at low speeds. Starting is therefore difficult, and if the auxiliary air valve begins to open at the usual motor speed the mixture will again be much too lean. These symptoms, however, unless properly interpreted will probably lead the owner to increase the gasoline supply, or to adjust the spring tension of the auxiliary valve so that the latter will not open until quite high speed is attained. In other words, he adjusts to give a suitable mixture at one speed and at other speeds the mixture is extravagantly over rich. It is well not to be too easily satisfied with the carbureter's performance, as it may be found that one fault such as the above has been imperfectly offset by another fault in the other direction instead of the correct adjustment being made where the fault really lies. A good carbureter will give a sensibly correct mixture at all speeds within the ordinary range of the engine. If it fails to do this the thing to do is to investigate until the trouble is found.

Keeping the Lens Mirrors Clean.

Few owners of cars, even those who drive frequently at night, appreciate the importance of keeping the lens mirrors and front glasses clean. A greasy or dingy surface such as follows one or two evenings' driving absorbs a considerable percentage of the light from the flame. By far the best and handiest thing to clean the lens mirrors is a mixture of equal parts alcohol and water. Denatured alcohol answers the purpose perfectly well. Pure alcohol evaporates so quickly that it leaves the greasy film pretty much as it was, whereas a 50 per cent solution evaporates more slowly and gives time to wipe the glass clean. It would be an excellent idea for every garage to keep a bottle of this solution and some clean rags always on hand. While on the subject of lamps it is worth mentioning that all gas tubing from a generator should slope either downward or away from the generator, and there should be provision for draining it at its lowest point, since there is a gradual condensation of water in the piping which, if it collects in pockets, results in objectionable flickering.

Changing Carbureter Spray Jet Size.

Occasionally a carbureter is found to be too large for the engine or to have too large a spray orifice. The advice has been given in such a case to reduce the size of the spray orifice by lightly pening the top of it with a hammer. This is counsel of doubtful value, even if the hole be afterward reamed true, since it is manifest that the burr formed in the top of the orifice cannot possibly be deep enough to be at all regular in its form. It will almost inevitably throw a jet slantwise instead of straight, and this jet failing to strike the main part of the air stream will be only partly atomized, with resulting misfiring and general bad behavior, especially at low speeds. If a new nozzle of smaller size cannot be substituted, the best thing to do in case there is no needle valve to adjust the flow of gasoline to the jet is probably to warm the ingoing air as much as possible, in order to make evaporation by temperature take the place of atomizing due to the air's velocity.

Large Oil Gun a Valuable Adjunct.

A handy appliance for the garage and even for the private owner is a large quick action oil gun, which is easily made from an old bicycle pump by plugging up the outlet and drilling and tapping the bottom plate for a nozzle. The bottom plate can be cut down to the diameter of the pump barrel in case it has an extension to be held by the foot when pumping. Autoists will

find such an oil gun as the above handy in many ways, as for quick filling of lubricators and scattered oil cups. It is very convenient also for sucking out the oil from the gearcase when a fresh supply is to be put in. This oil is usually too stiff to drain out, and as it is too full of steel chips to be allowed to stay in the gearcase, it must be removed in some manner. Obviously for such use the nozzle of the oil gun should be short and fairly large to permit the thick oil to enter.

Quickly Locates a Knock.

Tracing a knock is sometimes a puzzling job. It may be in one of the main bearings of the engine, in the camshaft bearings, in a loose valve lifter, in a loose camshaft gear key, in a loose pump or magneto drive coupling, an unsuspected loose bolt between two parts supposed to be fast, or in any of a dozen or score of other unsuspected places. A valuable aid in locating a mysterious knock is a flexible speaking tube such as is used with phonographs. One end of such a tube can be held to the ear and the other moved about from point to point until the exact spot is found where the noise is loudest. Another aid is a light bar of iron, one end of which is pressed against the part where the knock is suspected and the other touched to the forehead or the teeth, when the sound is clearly transmitted.

Handy Piston Head Scrapers.

In most engines the piston heads can be scraped clean of carbon without removing the pistons from the cylinders by means of specially formed scrapers introduced through the opening over the valves, or through the spark plug holes when the latter are horizontal. The form and size of scraper will depend on the particular engine, but almost any suitable form may be made from 5-16-inch steel tubing about 12 inches long having the ends hammered flat and turned over at right angles in a vise. The ends are then filed straight and sharp, and the shank of the scraper may be bent to right or left, if necessary, or left straight. Frequently two scrapers will be needed in order to use both right and left hand bends. The advantage of tubing for this purpose is that no blacksmith work is necessary.

Draining Gear Box and Rear Axle.

It is a familiar fact that the gearbox requires to be periodically emptied of oil and the accumulated metal grit washed out before fresh oil is supplied. The same is true of the rear live axle casing, except that the gears in the axle do not clash and therefore do not wear out as fast as the change speed gears. At least once in a season the oil in the rear axle should be drained out, a liberal supply of kerosene introduced, and the axle jacked up while the engine is run to agitate the oil and wash out the differential, etc.

Care of the Tire Pump Leather.

The proper unguent for the cupped leather washer of the tire pump piston is vaseline. Oil is too thin and it tends to work into the rubber hose, and even into the tire itself if too much is used. Vaseline, on the other hand, clings to the leather and lasts a considerable time. If the leather becomes dry it does not hold air well and pumping to high pressures becomes impossible, while the labor of pumping even to low pressure is greatly increased.

How to Get Rid of the Squeaks.

It is very annoying to have the car rattle and squeak whenever it goes over a little irregularity in the road, and it is also bad for the car. Each squeak means friction in the spring hangers, radius rods, or brake connections, or between the spring leaves, which, if not corrected, will soon cause a permanent looseness. Liberal use of the oil can is the obvious remedy. A light-running and noiseless car is always the sign of a good driver who takes pride in his work.

MIXED FUELS FOR AUTOMOBILE ENGINES

By THOMAS L. WHITE.

IN considering the question of mixed fuels, it is well to bear in mind that there is no such thing as an ideal fuel to serve the purpose of a standard. Nor, for the matter of that is it altogether correct to say that any one fuel is intrinsically superior to any other. What is really implied in such a statement is that for use in the standard motor, which is an instrument designed to burn gasoline, fuels naturally grade themselves in a descending scale. On such a list crude oil would hardly find a place at all, yet given a motor designed for burning it, this fuel can hardly be surpassed. To quote from an address on "Fuels for Automobiles," recently presented by Dr. Fritz Warschauer to the Association of German Chemists at Berlin: "As the burner of a kerosene lamp is formed differently from the burner of an alcohol lamp; as the construction of a gas burner is radically different from that of an acetylene burner; so also the combustion motor must be especially adapted to the peculiar properties of the fuel used." This necessary adaptation may range all the way from the total reconstruction of the motor in its more basic features to a few easily made adjustments in the carbureter, and it may be taken that the tendency of "the attempts which are being made everywhere to produce a suitable automobile fuel" is to conserve by suitable blending the structural integrity of the automobile motor as we have it to-day.

Apart from the possibility of an increase in the fuel resources of the world due to some revolutionary discovery, the ingredients in any mixed fuel for automobile use must be confined to the following list, in which, for completeness, gasoline is included:

GASOLINE.

Average composition, C=84, H=16.
Source, petroleum.
Boiling point, 50° to 150° Cent.
Specific gravity, .680 to .720.
Calorific value, 19,000 B. T. U.
Latent heat, small.

BENZINE.

Average composition, C=92, H=8.
Source, coal tar.
Boiling point, 80° Cent.
Freezing point, 5° Cent.
Specific gravity, .899.
Calorific value, 19,000 B. T. U.
Latent heat, small.

ALCOHOL.

Average composition, C=32, H=8, O=35.
Source, vegetable matter, principally corn, beets, potatoes, sugar cane.
Boiling point, 70° Cent.
Specific gravity, .806.
Calorific value, 12,600 B. T. U.
Latent heat, considerable.

TAR BENZOL.

Average composition, C=92, H=8.
Source a by-product in the manufacture of coke.
Boiling point, 80° to 120° Cent.
Specific gravity, .895.
Calorific value, 19,000 B. T. U.
Latent heat, small.

KEROSENE.

Average composition, C=85, H=15.
Source, petroleum.
Boiling point, 150° to 300° Cent.
Specific gravity, .800 to .825.
Calorific value, 19,000 B. T. U.
Latent heat, considerable.

MOTOR SPIRIT, NAPHTHA, BENZOLINE, BENZINE.

Average composition, C=85, H=15.
Source, petroleum and shale.
Boiling point, 60° to 160° Cent.
Specific gravity, .750.
Calorific value, 19,000 B. T. U.
Latent heat, appreciable.

METHYL ALCOHOL, WOOD SPIRIT, NAPHTHA.

Average composition, C=38, H=12, O=50.
Source, the distillation of wood.
Boiling point, 66° Cent.
Specific gravity, .812.
Calorific value, 9,600 B. T. U.
Latent heat, appreciable.

ACETYLENE ETHENE.

Average composition, C=92, H=8.
Calorific value, 25,000 B. T. U.

This last named gas is an endothermic compound, which means that, independently of its energy as a fuel, it is capable of de-

composing with the evolution of heat when submitted to the action of great pressure or heat or both.

Such being the chief materials at the service of the blender, what are the principles which determine the nature of the results which we can hope to attain? The broad guide to work by is, of course, that of averages. By it the calorific value of a pound of mixed fuel can be calculated once the calorific values of its constituents and the proportions in which they are present are known. The latent heat of a blend can be figured in the same way, and within limits its behavior in passing under the action of heat from the liquid to the gaseous state. It is when we come to the actual phenomenon of combustion in the motor that the relation of what should happen to what does happen ceases to be entirely a matter of averages.

The useful work which can be extracted from a given fuel by a heat engine does not merely depend on the calorific energy of that fuel, that is, on the gross number of heat units which are liberated by the combustion of a pound of it, but also on the manner of their liberation. Thus, to take one point of importance which enters into the question of the efficiency of a motor, it makes a great deal of difference whether combustion is complete during the early part of the power stroke or is continuous during the whole expansion. Consequently, when we are considering the combustion of a given fuel in a given motor, the consumption per horsepower hour depends on two factors, one of which may be described as quantitative, and the other as functional. When two fuels are blended to make a third it is the functional quality of the mixture which evades the rules of averages. To cite an extreme illustration, although water would generally be regarded as the antithesis of a fuel, having no calorific value whatever, the addition of a small percentage to pure alcohol actually increases its thermal efficiency in the motor. And generally, when a blend is made of two fuels the effect of each on the manner in which the other liberates its energy is a factor in the thermal efficiency which cannot be calculated and which must therefore be determined empirically. This does not pretend to say that there is no room for intelligent anticipation, but simply that exact deduction is not possible.

Confusion Regarding Addition of Various Fuels.

It is a common idea that the maximum power of a motor can be increased by the addition to the fuel used of another of a higher calorific value. This belief is not borne out by facts. It is a matter of calculation, which can easily be verified, that the percentage increase in the calorific value of the blend due to the added ingredient is almost exactly in the inverse proportion of the percentage decrease of the weight of the blend which can be consumed in one stroke of the motor. Or, to put the matter another way, it appears to be a fact for all known fuels, and therefore for mixtures as well, that the calorific value of a given fuel and the amount of air necessary to burn one pound of it have a ratio which for practical purposes may be regarded as constant. There is no allowance made in this statement for variation in thermal efficiency nor for any endothermic energy which may be liberated in the motor. In the light of the fact that the specific power of a motor is thus virtually constant, it is curious to find Dr. Warschauer stating, "The addition of benzol materially increases both the inflammability and the calorific value of alcohol. The motor output, therefore, increases while the fuel consumption is reduced." If the output is larger, as stated, the increase is solely due to the functional effect of the admixture, and certainly not to the increase in calorific value.

There seems to be a general consensus that the coming fuel for the motor car will be a blend with an alcoholic base. Straight alcohol, which, owing to the unlimited quantities in which it can be produced and the tendency of the price to become lower and lower as the demand for it increases, would be the ideal substitute for gasoline were it not for the fact that for a number

of reasons it is unsuited for use in the high speed low compression motor. There is no necessity here to enumerate these reasons. It is sufficient to say that in France and in Germany, where the alcohol situation is much further developed than with us, the problem of using alcohol in the gasoline motor has reduced itself to the problem of finding a fuel with which it can be satisfactorily blended.

The principal shortcomings of alcohol which it is sought to remedy by blending are its comparatively low calorific value and the tardiness with which a mixture of alcohol vapor and air takes fire. A more vigorous ignition and a speedier inflammation are essential if the basic principle of automobile practice of seeking power in the direction of a high revolution per minute rate is to be conserved. The heavy, slow-running motor with a high compression and a large cylinder volume is the only alternative, and while possibly admissible for certain forms of commercial vehicle, it is otherwise too heavy and too bulky.

Seeking a Substance to Mix with Alcohol.

While it may be said that the admixture of any volatile hydrocarbon of the olefin or aromatic series with alcohol distinctly improves its quality as a fuel, the ingredient which has found most favor up to the present is benzol. Under the name of Motorine, over 2,000,000 gallons of a mixture consisting of equal parts of benzol and alcohol have been used to date by the Paris motor buses. It is, however, important to point out that the motors of these vehicles are specially designed to burn this blend, and their satisfactory operation cannot be taken as a proof that an alcohol-benzol mixture is a true gasoline substitute in the ordinary motor. As Dr. Ferhmann, the expert of the German government, puts it, "It has been proposed to mix alcohol with other fuels of high calorific value, as, for instance, benzol or ergin, and thus to increase its heating value and above all its inflammability. With slow motors good results have been obtained in this manner, but with high speed motors new difficulties arose as a result of the impossibility of completely burning these mixtures, so that there was a great deposit of soot in consequence of the admixture." Alcohol benzol blends have the further disadvantages that the cleanly character of the natural alcohol is entirely lost, and that the exhaust from their combustion is the reverse of odorless. Also from an economic point of view, the sources from which benzol can be procured are not sufficiently extensive or elastic to allow of production on a scale which would be called for to meet a demand for alcohol-benzol mixtures.

In the address by Dr. Warschauer, from which quotation has already been made, the conclusion is arrived at that the best admixture to make alcohol more inflammable is acetylene. He says: "Probably the only admixture which is free from these disadvantages is gaseous acetylene. The admixture of alcohol with acetylene has been proposed by several others besides Dr. Roth. Thus, the Americans, White and Barker, bring a spray of diluted alcohol in contact with calcium carbide, thus forming an explosive vapor known as alkoethene. This fuel is therefore a mixture of alcohol vapor, air and acetylene gas. This process, which, besides in America, caused considerable discussion in France, is, however, probably not very practical, for the reason that the acetylene is generated from the carbide directly on the vehicle. Aside from the great weight from carrying along the carbide, this process involves the further objection that the acetylene is generated irregularly, especially on account of the vibration on the road." As one of the inventors responsible for this process, it will not perhaps be considered out of place for the writer to take the opportunity here of making a brief rejoinder to Dr. Warschauer's objections.

It may be mentioned that in dealing with the various ingredients which may be added to alcohol, Dr. Warschauer classes acetylene with picric acid, and in the opinion of the writer this association is a very happy one, inasmuch as it touches the real root of the usefulness of acetylene as a corrective for alcohol. Acetylene is not only a fuel in the accepted sense of the term. It is also an explosive. It follows that what we have called the functional action is in the case of its admixture very

marked. The trouble with alcohol is its all-around slowness. In a fast-running motor it continues to burn during the entire expansion stroke, and some of it leaves the motor without being burned at all. Now, when a mixture of air, alcohol vapor, and a sufficient proportion of acetylene, which need not be considerable, is compressed and a spark passed, the instantaneous rise of pressure in the vicinity of the spark plug compresses the adjacent layers of gas beyond the ignition pressure of the acetylene molecules and spontaneous ignition results. There is thus passed throughout the mixture an energetic explosion wave which travels from the spark outwards, the acetylene being progressively detonated owing to its unstable character, the alcohol in which it is suspended being ignited at the same time. Under such circumstances the progress of the flame cap is not by direct inflammation from molecule to molecule of the mixture, but by the adiabatic compression of successive zones of the mixture to the preignition point. Now, even on the supposition, which is of course purely imaginary, that the acetylene has no fuel value, its constituent atoms remaining unburned after the liberation of its endothermic energy, the benefit to the combustion of the alcohol would still remain, for the two desiderata of a vigorous ignition and a speedy inflammation would still be realized. If it be further borne in mind that the efficiency with which a fuel can be burned in a given motor is, to take Dugald Clerk's figure, cut in two if it is burned throughout the stroke instead of at the beginning of the stroke, it will readily be seen that the gain due to the presence of acetylene in an alcohol-air mixture is largely independent of quantitative consideration. The answer, therefore, to the first objection of Dr. Warschauer is that since it is the functional action of the acetylene which is of most consequence, no very great quantity of it is required to accelerate the alcohol sufficiently, and that consequently the weight of carbide which must be carried along to generate the necessary acetylene is by no means the heavy burden which he supposes, being on the most generous estimate well under 20 per cent. of the weight of the alcohol in the fuel tank.

As to the second criticism, it should be mentioned that in making alkoethene, the air in the charge is preheated by the exhaust before passing through the carburetor and the carbide chamber. The surfaces of the carbide are therefore always dry and the net effect of the shaking is to preserve a clean carbide surface. There results not a variable but a uniform generation of acetylene. If there were no agitation and consequently no accumulation of ash preventing the access of the vaporized dilute alcohol to the carbide with which it reacts, then an unequal flow of gas could reasonably be expected. The practice in acetylene generators of the type where the water is dropped on the carbide, of mechanically shaking the grate on which the carbide rests, may also be mentioned.

Acetylene Appears to Fill All Conditions.

Putting aside now all matters of controversial detail, it is difficult to see how the claim of acetylene as the natural corrective of the faults of alcohol can be put aside. Acetylene has the same percentage composition as benzol, and, like that compound, exerts a reducing action on any acetic acid which may be formed by the combustion of the alcohol. It has the advantage over benzol that it is cleanly; that it can be completely burned in the motor, and that it produces an odorless exhaust.

Lastly, as a commercial proposition, acetylene means carbide, and since limestone and coke, the raw materials from which carbide is manufactured, can be procured in unlimited quantities, the tendency with acetylene, as with alcohol, will be to become cheaper and cheaper as the demand for it increases. Of no other ingredient with which it has been proposed to mix alcohol can the same be said. Even if their technical merits were greater, they would prove but a stopgap, and by their use the problem of finding a gasoline substitute would not be solved but merely shelved for a while. That this problem is a pressing one may be surmised from the fact that there is a standing offer by the French government of \$10,000 to the discoverer of a suitable and satisfactory fuel for use in the existing motor.

LETTERS INTERESTING AND INSTRUCTIVE

HOW, WHEN AND WHY TO USE KEROSENE.

Editor THE AUTOMOBILE:

[1,559.]—Will you kindly oblige a subscriber by answering through your columns the following queries:

1. What is the consensus of opinion regarding the practice of periodically treating the cylinders with kerosene? When I first bought a car I was told to cleanse the cylinders with kerosene once a week. Now I hear it asserted that this does more harm than good. What is one to believe?
2. If kerosene is to be used, how much and how often? Also what is the best method of procedure?
3. Will this treatment avoid the necessity of taking the cylinders down for scraping, provided of course gasoline and lubricating oil have not been used in excess?
4. How often is it well to have the engine taken down? Can the cylinders be properly scraped while in place?
5. How long does lubricating oil retain its lubricating properties? In other words, how often should the crankcase be drained?
6. "Hold-ups" by highwaymen seem to be increasing at a disagreeable rate. Does the ordinance, in New York City, for example, against carrying concealed weapons forbid the carrying of firearms in one's automobile?
A. G. D.
New York City.

1. We have never heard any objections to this practice and do not see any cause for them except laziness.

2. Many foreign chauffeurs use it after each day's run, pouring a couple of spoonfuls into each compression cock and letting it stand over night. In the morning drain off the dirty oil from the crank case and put in a fresh supply. Most owners find this too troublesome, however, and do so only once a week, or after every five hundred miles. The manufacturer of your car can give you the best advice on this subject.

3. "Provided gasoline and lubricating oil have not been used in excess," it should rarely if ever be necessary to scrape the cylinders. Otherwise, the kerosene treatment will have a very good effect.

4. Have it taken down whenever necessary; this depends on the care it has been given, as above. Whether the cylinders can be scraped while in place or not depends on the design of the motor.

5. This, too, depends on the motor. The crankcase should be drained whenever the kerosene treatment is used, and oftener, if necessary. The manufacturer can advise you best.

6. The law only applies to weapons "concealed," whether in an automobile or not; there can be no objection to carrying them openly. It would not be illegal, for example, to carry your revolver in a holster attached to the seat or the steering column.

AN OLD FRIEND IN A NEW GUISE.

Editor THE AUTOMOBILE:

[1,560.]—I have worked out a method of using up old casings which has been of considerable value to me and, I believe, would be to others. It is to remove the clincher bead and then put the casing on another as a tread, riveting through both about every six inches on each side. I use ordinary copper rivets about 1-2 inch, with heads shaped as follows: make a mold of a piece of round iron, with the end rounded and a hole drilled for the stem of the rivet, and then putting the rivets in the mold hammer down the heads over the rounded end so as to make them slightly cup-shaped. In this shape they will not injure the tube and are not so likely to pull through. A set of old tires fixed this way lasted me all last Winter, and a number of my friends use the same method. One might think that a casing would not go over another of the same size, but with a little care it is easily done.

Chinook, Montana.

C. F. H.

We recently printed a letter from a correspondent who had a method similar to this, but instead of riveting merely punched holes in the old tread and laced it on with a strip of rawhide. Your method is much more workmanlike, of course, but it is a question whether the old casings are worth so much extra trouble.

CARBONIZING AND EXCESSIVE CONSUMPTION.

Editor THE AUTOMOBILE:

[1,561.]—Will you kindly let me know in the next issue what is the cause of carbon? Have been troubled a great deal in my 1908 car. I use the best oil and do not believe there is anything wrong with the carbureter. I notice in this particular car the people are all having a great deal of trouble, and I cannot see any cause for it outside of carbureter and oil. Would like to know if there is any possible way of changing consumption of gasoline by changing the carbureter in any way, such as raising the float, or lowering it, or changing size of hole in jet. I am only getting six miles on a gallon and you can realize this makes expensive running.
W. W.

Brooklyn, N. Y.

Carbon deposits in the cylinders are usually caused by an excess of lubricating oil, but may also come from an over-rich mixture. The best way to find out which is responsible is to examine the exhaust gases. Thick bluish-gray smoke indicates too much oil; thin black smoke, together with a very strong smell of gasoline, means that the mixture is too rich. In either case the remedy is obvious. Provision is always made for changing the consumption of gasoline. You had better not tamper with the jet, but the level of gasoline can be easily lowered by adjusting the float. On the car you mention there is also an adjustable shutter over the main air inlet; enlarging the air opening might have the desired effect. The gasoline consumption at present is certainly too large.

TROUBLES AFTER LENGTHENING WHEELBASE.

Editor THE AUTOMOBILE:

[1,562.]—Will you kindly give me your opinion on this question in "Letters Interesting and Instructive?" Does lengthening the wheelbase of a small runabout, by placing the rear axle about a foot further back, take off any power in the engine? Or should the loss of power be looked for in the engine? In this particular case my car, a single-cylinder Cadillac, which was a good hill-climber before the change, seems to have hardly any power at all on a very slight grade, although it runs fine on the level.
G. J.
San Francisco, Cal.

There is no reason why lengthening the wheelbase, in itself, should decrease the power in any way. The trouble is that work of this kind usually introduces complications not at first apparent. Placing the rear axle further back makes the chain run at a considerably different angle, and this, with the added inclination when the car is on a hill, may cause it to drag on one of the axle tie-bolts or a cross member of the frame. Any unusual noise would probably be an indication of this. Again, the brake connections may have been made to interfere somewhere in the lengthening process, causing the brakes to drag. Finally, remember that you have added at least a hundred pounds to the weight of the car, and on the hills that you are accustomed to climb this may be just the difference between high gear and low.

PROJECT FOR A TABLE OF EFFICIENCIES.

Editor THE AUTOMOBILE:

[1,563.]—As a prospective purchaser of an automobile, without more than the average knowledge possessed by the public in general upon the subject, and believing that there is a "best" among all products, would it be possible and agreeable for you to give the public and me through your paper a record of all gasoline makes, based upon the performance of each in competition, where regular stock cars were used. Taking every event in which each make has competed, where there were as many as, say, four cars in the event (except gymkhana contests). For hill-climbing contests figure the best time in any class as par, and the lowest as zero, and the same in races.

Reliability, economy, etc., contests are usually figured so many points off from 1000. For example: "The X car" of all styles and sizes during the year September 1, 1907, to September 1, 1908, had ten cars in competition in this country, and its average for the

ten contests was 999 points out of a possible 1000. Also could not a table be computed on the same basis for five years? Price, size and style are not difficult to determine, being largely a matter of individual taste and ability, but reliability, efficiency and durability seem to be the things impossible to get at. M. C. CUMMINGS.

Chicago, Ill.

Such a table would be valuable indeed were it possible to make one, but consideration will show you several difficulties. In all contests the success of a car depends largely on the driver; a second-rate machine driven by an expert can often defeat a really good car with inefficient handling. There are entirely too many disturbing elements for such a table ever to be practicable. To help you out of your difficulty we can only repeat that we believe there are several hundred cars on the market which, with reasonable care, will give perfect satisfaction. If you buy a standard and well-known car from a reputable dealer you cannot go far wrong.

INFORMATION ON SEVERAL SUBJECTS.

Editor THE AUTOMOBILE:

[1,564.]-Please answer these questions through your paper:

1. What is the difference between a live type and a floating type rear axle?
2. Would it be possible, on a belt-driven motorcycle, to loosen the belt and let the motor run independent of the rear wheel?
3. Would you think a V-shaped belt, such as used on some of the motorcycles, would be serviceable in mountain districts?
4. Could you please give me the address of the companies that publish the "Motorcycle" in Chicago and "Pacific Motoring" in Los Angeles?

Newman, Cal.

1. The former includes the latter. A live axle is any axle containing parts which turn the wheels, in addition to carrying the weight of the vehicle; as distinguished from a dead axle, which only carries weight. A floating axle is a particular type of a live axle, in which the shaft which turns the wheels is independent of the axle proper, and can be removed without affecting the axle's weight-carrying capacity.

2. It would be possible to do so, by means of an idler pulley, for example, but there would be no particular advantage in such a construction for ordinary use.

3. There is no reason to the contrary, provided the belt and pulleys are of suitable proportions.

4. Motorcycle Publishing Company, 299 Broadway, New York; Pacific Motoring, 1012 South Main street, Los Angeles, Cal.

MORE ABOUT THAT 40 PER CENT. DIFFERENCE.

Editor THE AUTOMOBILE:

[1,565.]-Really you must be joking. But you have made the statement with such earnestness that I will reply. One-ninth of anything is 11.1-9 per cent. of it. One-sixteenth of the same thing is 6.1-4 per cent. of it. Subtract one of these from the other and the difference is slightly under 5 per cent. Can I say any more? Forty per cent. is a lot of difference. No, I neither smoke nor drink. An ice cream will do.

As for the public opinion, I must stick to my statement that it proves nothing until it has been educated and agitated up to the highest point. I assume that my lawyer, my doctor, my grocer, and my tailor are specialists and know their business. When I wish to buy their specialty I aim to take their advice and get the benefit of their experience. If they are wise surely they will do likewise when they come to me for my specialty.

There could be no progress if there were no leaders. Somebody must be ahead of the masses. And since there are always leaders, the up-to-date man will keep pretty well up to them. You are not publishing a carriage journal, although carriages are twenty times as numerous as autos. You devote space to the navigation of the air although public opinion has been almost overwhelmingly against it. And if public opinion is right, I would like to know why it is that motors weighing ten to twenty pounds per horsepower are used on autos in two, four and six-cylinder forms when there are five-cylinder ones to be had which weigh but three pounds to the horsepower. What ban is there on three and five-cylinder forms which the even number escapes?

And why does the public flop so often? Right, like truth, is immortal. If the rear-entrance tonneau met the needs of the public, as public approval indicated, why did it die out so suddenly? Simply because somebody learned that side entrances

were better. And so it goes. Public opinion is simply massed imitation. Jones wants an auto, knows nothing about them, so buys what he sees Smith using. Best and only thing to do—since he will not stop to think about the subject and consider what he wants to use it for and what it ought to be to meet his needs. And particularly since he will not take the advice of experts. But he does even worse. He sees that Smith's rig is big, so he asks for a bigger one. And many Joneses make that senseless thing which we call public opinion. The only consolation is that Jones learns after he has owned a few autos. CHAS. E. DURYEA.

Reading, Pa.

You have side-stepped the question entirely. The difference between one-ninth of 100 per cent. and one-sixteenth of 100 per cent. is five, or, to be exact, 4.86 per cent., as you say. But the original question was the "percentage" difference between one-ninth and one-sixteenth—something quite different.

In the last part of your letter it looks as if you were arguing against yourself. Motors weighing 10 pounds to the horsepower are used because the three-pound ones are impractical for automobile use. There is no ban on three and five-cylinder forms except their own inherent difficulties. And the public certainly showed its good sense when it adopted the side-entrance tonneau; it "flopped" only because the rear entrance had never met its requirements, and it immediately took up the first thing that did. We think the ice-creams are on you.

MORE ABOUT PERCENTAGE OF DIFFERENCE.

Editor THE AUTOMOBILE:

[1,566.]-In your issue of September 17 I noticed Mr. Duryea's discussion with you as to the difference between one-ninth and one-sixteenth. If I understand the question correctly the difference is only a fraction under 5 per cent. the way I figure it. I asked another party what he figured the difference to be, and his result tallied with mine, although we used different methods. Of course figures talk, and if your figures can talk louder than mine, I'll take water.

Cincinnati, O.

We have answered Mr. Duryea's second letter elsewhere in this issue. You have made the same mistake of confusing the difference between two per cent.'s and the percentage difference. If you want the figures, $0.111 - 0.0625 = 0.0486$; $0.0486 \div 0.111 = 0.437$, or 43.7 per cent. You assume that by one-ninth and one-eleventh is meant one-ninth and one-eleventh of one hundred per cent., for which there is no justification whatever. The one-ninth must itself be taken as equal to one hundred per cent. This is straight arithmetic.

PROPORTIONS OF A GRINDING COMPOUND.

Editor THE AUTOMOBILE:

[1,567.]-I would be pleased to know the exact proportions to make a good valve-grinding compound. I have tried emery, but find it is apt to cut the valve. My idea is to make it up with grease so that it will stay suspended and be ready at all times. If you could help me in this matter I will certainly appreciate it.

Syracuse, N. Y.

A READER.

There are a number of ready-mixed grinding compounds on the market which give good results. If you desire to mix it yourself, the best thing to add to the emery is ordinary cylinder oil, enough to form a paste convenient to work with. The emery you have been using is probably too coarse; try a finer grade.

ARE CHAUFFEURS A DRUG ON THE MARKET?

Editor THE AUTOMOBILE:

[1,568.]-Are chauffeurs a drug on the market in New York? The Motor League of Toronto claims that it has hundreds of applications for jobs as chauffeurs in that city, but no positions open. I am a carpenter by trade and get good wages in the Summer, but am idle all Winter. I am thinking of going to New York this Fall when the works begin to be tied up to see if I could get in a first-class repair shop and learn how to handle and repair machines. Do you think this would be feasible? I have taken down an Olds 1903 runabout several times and have handled it on the road, but have no experience with other makes.

Prescott, Ont.

PERCY N. ROWE.

The best answer to your question appears to be the old

saying: "There is plenty of room at the top." Chauffeurs of the engine-racing, clutch-banging, gear-smashing type are only too plentiful here, and no more are desired; but we do not think that a really good man would be long without a job. Your experience with the Olds should have taught you the principles of automobile construction, and with this you ought to be able to get a position in a repair shop. We believe that there is a better opening for the average man in the repair shop, however, than as a chauffeur.

FOR THE ATTENTION OF TAXICAB MAKERS.

Editor THE AUTOMOBILE:

[1,569.]-Will you kindly give me through your "Letters Interesting and Instructive" the following:

What are the taxicab rates for fares, etc., in New York, Philadelphia, Boston?

What is the cheapest taxicab that can be bought and at what price; also what would you call the average price for American-made cabs.

CLARENCE S. WEIMER.

Lebanon, Pa.

The taxicab rates in New York City are 50 cents for the first mile and 40 cents for each additional mile. For all waits the charge is 10 cents for each six minutes. We cannot give you the rates for other cities, but think that you will find the New York rates about the average. For trips outside of the city there is an additional fare, but this is dependent on the road conditions as well as the distance.

As regards the price of taxicabs, your letter will probably attract the attention of the manufacturers, who will answer this better than we could.

THE SIX-CYLINDER VERSUS FOUR AGAIN.

Editor THE AUTOMOBILE:

[1,570.]-I am undecided in my purchase of an automobile for 1909 between a six-cylinder and a four-cylinder car. Will you kindly tell me in your "Letters" the advantages or disadvantages a six-cylinder car has over a four?

C. W. M.

Corning, N. Y.

You will find material for several large volumes on this subject in the issues of this magazine during the past year, where the question has been threshed out by supporters of both types. To tell the truth, however, we believe that if you buy a car of reputable make you will never have cause to worry about the number of its cylinders.

CONCERNING THE USE OF DECARBONIZER.

Editor THE AUTOMOBILE:

[1,571.]-If my experience with the solution lately put on the market for ridding cylinders of a gas engine of carbon will assist any of your readers, shall gladly give same. When put on the market last Spring, I secured a half-gallon and from its continuous use, even during the hot months, am convinced it is a most useful adjunct to the proper running of an automobile. The directions given with the article call only for use as a cleanser at times, but it has been used right along in the cylinder oils in my car, and after any long trip would give the engine an extra cleaning with it, so that my car has not had the least engine trouble as regards over-heating, missing, sooted plugs, etc., since using the decarbonizing solution.

This method was followed: When first applied one to two ounces were injected into each cylinder after heating up the engine and removing the spark plugs; then the plugs were put back and the engine started, letting it run, say ten minutes or more, until the heavy black smoke issuing from the exhaust would lessen up, showing that the solution had been used up. Then would remove the plugs again and put in each cylinder one-half gun or so of kerosene, attach plugs again, start the engine, and run as before until all the dirt and carbon were entirely blown out.

I then stopped the engine, opened the pet cocks attached to pipes, one under each cylinder, driven into the engine case, thereby draining the case of few quarts of black, sandy-like, sooty oil, which one readily could see would do no engine any special good. When all of it was removed, then I put back the normal amount necessary for my case, two to three quarts, with six drams, or three-quarters of an ounce of the decarbonizer solution mixed thoroughly into a gallon of the oil. Through the oiler (tank) to the different parts of the engine fed by this oiler, goes the same mixture of oil and decarbonizer—3-4 ounce to the gallon—so that the engine is con-

stantly using the decarbonizer, and the plugs from this car when removed are as white and clean as porcelain can be made.

I first made comparative tests from 10 ounce to the gallon down to 1-2 ounce to the gallon, and found at 3-4 ounce to the gallon the solution which kept my plugs clean. When 10 ounce to the gallon solution was used, engine heated greatly; cut this to 5 ounce, still it heated, but not so much—plugs still white, but less heat; then cut it to 2 1-2 ounce to the gallon, still plugs white, but less heat; then 1 ounce to the gallon, plugs still just as white, but no extra heating noticed at all, even on hot days; then thought I would do better by cutting to 1-2 ounce to the gallon, when I noticed plugs, when removed, were slightly brownish, so tried 3-4 ounce to the gallon solution, which I found the solution necessary for my particular engine. I might add that each time I changed these solutions, the oil case was emptied with the oil gun and case filled with the mixture to be tried next; also the engine case drained and same strength mixture of oil and decarbonizer put back as was being used in the oil case. While wasting some oil from the engine case, the experiments have well repaid me, as I have the first trouble to occur yet from a choking engine.

In mixing the decarbonizer with the oil, better take a gallon at a time to shake it thoroughly and more easily. I have never used it in the gasoline, as I have heard reports of this manner of using, but should think it more economically used in the oil; also get to the place quickest where it is needed—in the combustion chamber. If there would be no splashing in the cylinders from the case, then plain oil would be necessary only in the case.

To satisfy myself that the cylinders were in no way being affected, I had them off two months after its use, and the walls of the cylinders, pistons, piston rings, etc., were just as clean as if scraped and polished; the only place where there was carbon was on each baffle plate between base of cylinder and engine case, and this was held there, as it could not properly get out to be blown through. The exhaust valves had very little carbon attached, and the engine power is to-day just as good as after thorough overhauling.

PALMER J. KRESS, M.D.

Allentown, Pa.

THE LOZIER'S MISHAP IN THE LONG ISLAND RUN.

[1,572.]-In your issue of September 24, describing the incidents of the Long Island Mechanical Efficiency run, the statement was made that H. M. Casbrunt's Lozier motor broke its differential and stripped its gears when attempting to get out of the deep sand between Amagansett and Montauk Point. We know that this was the common report, and you were, therefore, in a measure justified in accepting the report as true, but as this car did not break its differential and did not strip its gears, we believe that you will promptly make this correction and give publicity to the following fact:

Mr. Casbrunt was an amateur driver and owner of his car, entering on his own initiative. On the first day's run, after luncheon he left the control without the authority of the committee and raced to Amagansett at a speed of 50 to 55 miles per hour, in violation of the speed laws and the rules of the run. Unfamiliar with the road, he continued through the sand strip toward Montauk at racing speed, with wheels at times up to the hubs in sand. In the severe strain of these conditions, the spider holding the differential gears was broken—an accident, by the way, which has never occurred before. Not a differential gear or a gear of any kind was damaged, stripped, or broken, and when the spider was replaced, Mr. Casbrunt returned under his own power.

We have stated upon honor publicly, and repeat the statement, that there has never been a case of a broken or replaced differential or transmission gear or a broken or worn gear tooth, or one showing sufficient wear to require replacing, and we repeat this statement, and also the statement which we have publicly made that we do not believe that there will ever be a case of a broken gear or gear tooth in a Lozier shaft-drive car.

In view of the above facts, you can understand our wish to have this erroneous statement corrected.

LOZIER MOTOR COMPANY,
C. A. EMISE.

MORE ABOUT MINIMUM SPEED ON HIGH GEAR.

Editor THE AUTOMOBILE:

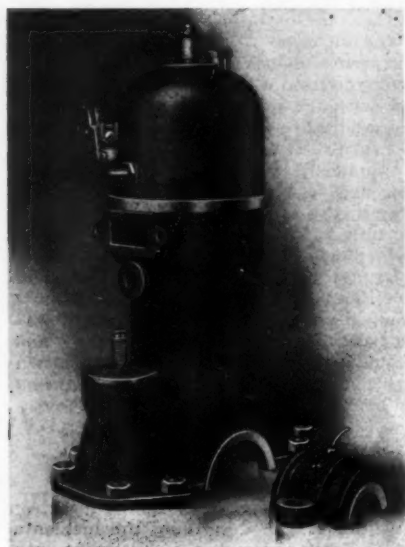
[1,573.]-Concerning the controversy in your columns over the minimum speed of a car on high gear, probably the average driver finds that a great deal depends on the condition of the road surface. On a perfectly smooth and level pavement I find it difficult to keep my speed down as low as 8 or 10 miles an hour on high gear, but where the surface is very lumpy, for example, on a bad cobble pavement, I experience no trouble in running at 3 miles an hour as shown by the speedometer. A maker's statement as to "4 to 40 miles on the high," or words to that effect, is therefore generally true enough if you put a grain of salt in the right place.

New York City.

R. M. PIERSON.

ANOTHER EXPONENT OF THE TWO-CYCLE MOTOR

ANOTHER addition to the growing ranks of the two-cycle exponents is the Bailey, manufactured by the Bailey Automobile Company, of Springfield, Mass. It is only after five years' experience with two-cycle engines that the Bailey Company has finally placed a car upon the market. It claims to have made radical improvements on all other two-cycle engines in use in automobiles, and also to have the most powerful two-



Cylinder Casting, Showing Intake Valve.

cycle, four-cylinder car in the field. The Bailey is built in two models, one a three-seated speedster and the other a touring car; both are listed at \$2,500.

Simplicity and sturdiness are the features of the power plant. The cylinders are cast separately, each with the upper part of its respective division of the crankcase integral. The lower half of the case forms the support of the whole motor, and has arms extending to the frame. Five long bearings of high-pressure metal carry the crankshaft and retain the pressure in the crankcases. One of the objections urged against the two-cycle engine is that wear on the crankshaft bearings will permit leakage of compression from one crankcase compartment to another, thereby reducing the power of the engine. However, as the present production of the Bailey Company shows no sign of leakage through the bearings after a very hard punishment over 6,000 miles of rough roads, this contention may be questioned. The shaft itself is made of vanadium steel with hardened and ground journals.

After a careful study of the problems involved, the Bailey Company adopted the automatic valve inlet, which is considered both simple and reliable. It admits a fresh charge to the crankcase during the entire aspiration stroke, thus causing no jerky suction on the carbureter as does the three-port system, while it has not the objectionable feature of friction in the crankcase, as in the type with rotating disc valves. The automatic valve may be seen on the base of the cylinder in the illustration; the intake manifold is clamped down over the valve. The cylinders are copper-jacketed, making a uniform jacket which can be replaced in case of accident at a very low cost.

The change-gear used is the three-speed selective sliding gear type with Timken roller bearings, connected to the engine by a multiple disc clutch of the most approved type. Timken roller bearing axles are also used; the front axle is a very strong I-beam, the rear of the floating type, with bevel drive. The springs are

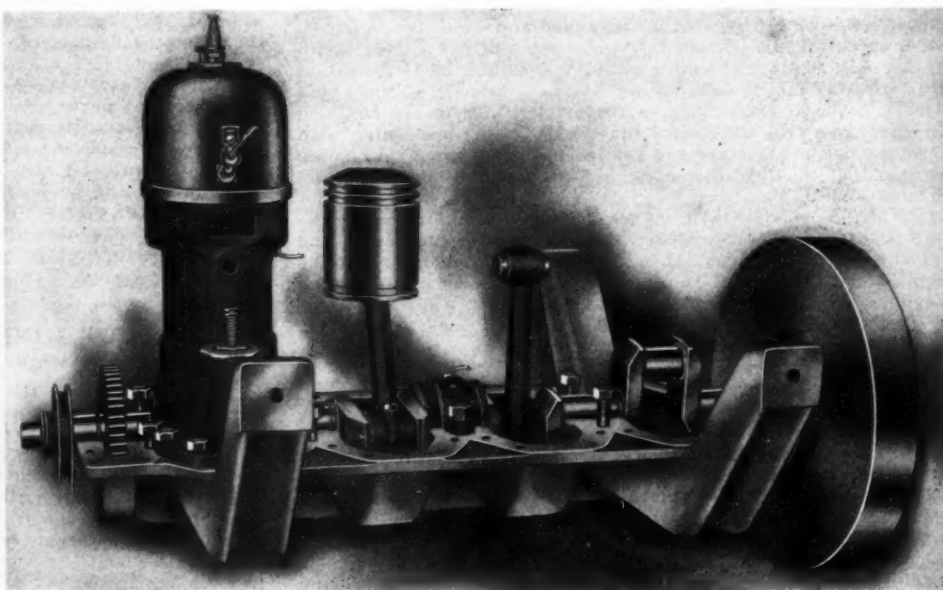
long and easy riding. The frame is a four-inch pressed steel channel, hung very low; the wheelbase is 112 inches.

The speedster recently made a trip from New York to Springfield in four and three-quarters hours and returned in five hours, a total of 325 miles. The company is housed in a new reinforced concrete building located on Birnie avenue, and is equipped with modern machinery throughout. With these increased facilities, the output for the coming season will be considerably increased, and the Bailey will be put on the market outside of Springfield.

It is still regarded as a rather venturesome experiment for a new company to undertake to build two-cycle cars, and no doubt with reason. The automobile-buying public has only just begun to learn the advantages of this type. It has its disadvantages as well, of course, and especially for the manufacturer. The designing of a two-cycle motor is a thing not to be undertaken lightly; a few thousandths of an inch change in the placing of a baffle plate, for instance, may make all the difference between success and failure. Then, there are as yet few standards for the beginner to follow; each must depend on his own knowledge and ingenuity, and work out every new problem for himself. Considering these difficulties, it is not to be wondered at that most designers, in spite of its many alluring possibilities, have preferred to give the two-cycle a wide berth. No one can predict the outcome of the struggle between the two types; but, in any case, the Bailey Company has the credit of being one of the pioneers who obtained for the two-cycle a fair trial.

NEW ELECTRIC WILL BE BUILT AT TOLEDO.

TOLEDO, O., Sept. 28.—The Toledo Electric Vehicle Company, which has recently been organized with \$50,000 capital, will manufacture electric runabouts. An old riding academy building on Collingwood avenue has already been leased, and machinery will shortly be installed. The company is an outgrowth of the Allen & Clark Company, which operated several months at 2014 Adams street. This concern being of the nature of an experimental firm, was organized with a limited capitalization, and formed for the purpose of improving an invention of A. F. Clark whereby, it is claimed, he is able to build a battery which will, at low current, carry an electric car further than any other battery known and at a rate of about 30 miles an hour.



Bailey Motor Partly Dismounted, Illustrating Method of Mounting Cylinders on Crankcase.

COLUMBIA MODELS ARE AGAIN TO THE FORE

By CHARLES B. HAYWARD

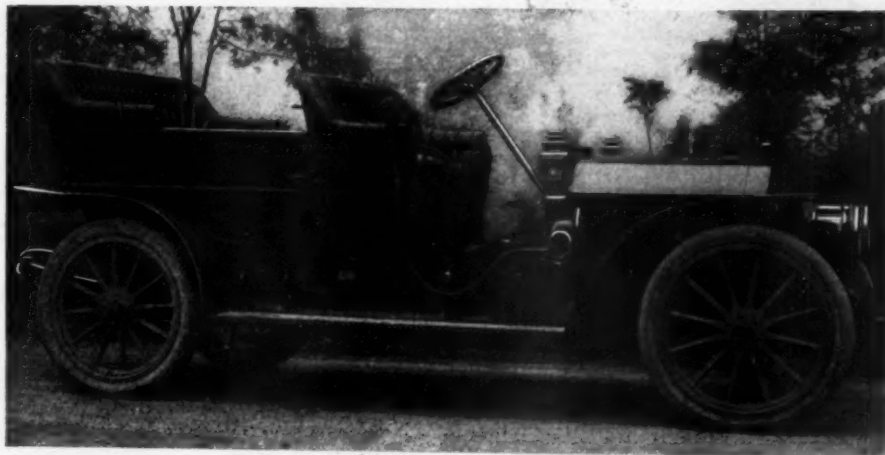
HARTFORD, CONN., Sept. 28.—

Activity is obtrusively in evidence at the great plant of the Electric Vehicle Company these days. A day spent at the monster works of this pioneer in the country opens a visitor's eyes to the creditable accomplishments of the hustling administration of H. W. Nuckols, the receiver, and Fred Law, the chief engineer. To see between 500 and 600 men at work is to convince one of the vitality of the famous plant and its progress toward a resumption of its former position in the automobile industry. The number of men employed has reached more than 50 per cent. of normal and is being gradually increased. The decks have been cleared through the working up of the material on hand into finished cars, the last of which were sold early in August.

For the coming season, a series of 100 of the new Mark XLVIII-4 30-horsepower gasoline cars is already on its way to the assembling department and deliveries will begin by October 10. At the same time a series of 50 of the Mark LXX electric victorias is also going through. A number of the best agents has been retained, and with Receiver Nuckols acting as sales manager, in addition to his multitude of other duties, there has been no difficulty in disposing of the cars as fast as they can be turned out. A second series of 100 of the gasoline cars will be started about the end of November in order to make a stock available for show selling.

New Models Have Their Distinctive Features.

In the case of both the gasoline and the electric car, they are new models in the full sense that the word is currently employed. In other words, they are not merely replicas of the former output of the Electric Vehicle Company, but, building on these as a foundation, they have been refined and improved in not a few particulars. Where the electric car is concerned, there is naturally not a great deal of change to be noted, though both the running of the car and its mileage, as well as its service generally, have been greatly improved by the adoption of the Hess-Bright ball bearings in the running gear. Two cells have been added to the battery, bringing its voltage at the terminal up to 72, and a few



Lines of Columbia Mark XLVIII 29-Horsepower Car for 1909.

other minor changes have been made, though so far as its external appearance goes, the car is the same as the many thousands of others of its kind that the company has turned out in the past, and which are now in use all over the country.

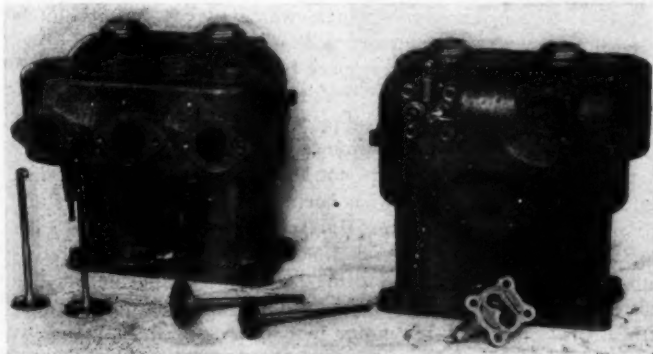
A review of the specifications of the Columbia gasoline car shows that its design has been the subject

of a great deal of study on the part of Mr. Law since his return to the factory, two years ago. The price has been cut \$250, now being \$2,750 instead of \$3,000, as formerly, but, gauging it from the standpoint of service and worth, the value of the car has been increased by more than double that amount by the improvements that have been effected concurrently with the cut of the list figures.

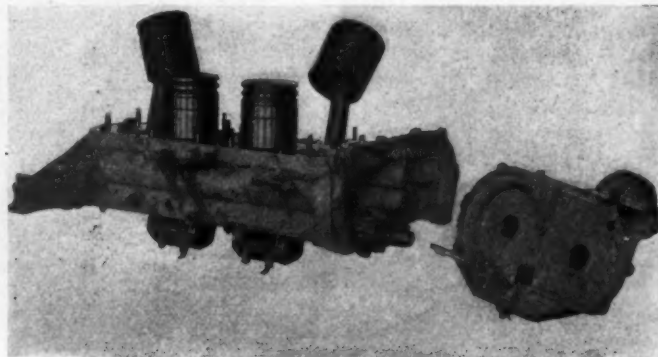
Principal Details of the Power Plant.

The motor is of the four-cylinder vertical type, with the valves on one side, but, contrary to the usual practice, the valves themselves differ in size. The inlet measures 2 1/4 inches, giving an opening 2 inches in the clear, while the exhaust is 1 13/16 inches in diameter, giving a 1 5/8-inch opening, the lift being 3/8 inch. The cylinder dimensions are 4 1/4-inch bore by 4-inch stroke, the output being 28.9 horsepower, according to the A. L. A. M. formula. The car will nominally be known as 29-horsepower, which rating is developed at a moderate normal speed, though even at the latter it shows a great deal higher figure on the brake, and, owing to its excellent valve and port design, it is capable of being speeded up to a very high r. p. m. rate at full load. One of the most noticeable features of the motor design is the H-B annular bearings on the timing shafts, so that the gears are practically supported between bearings. Bronze and nickel steel pinions are used and are protected by an oil-tight aluminum housing. Ball bearings are also employed on the forward ends of both the pump and magneto shafts.

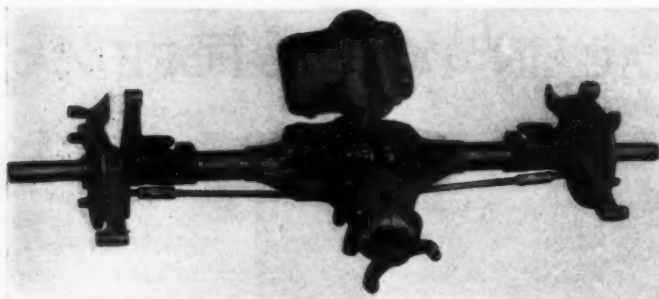
The Electric Vehicle Company was one of the first concerns in the industry to put in a complete drop forging plant, and can probably boast as extensive a collection of dies, designed especially for automobile work, as is to be found anywhere in the



Twin Cylinders from Valve and Ignition Side.



Crankcase with Crankshaft and Piston Assembly.



Columbia Rear Axle Driving Unit Complete.

country. Drop-forgings are accordingly utilized to a liberal extent, a special grade of nickel steel being used and every part being subjected to heat treatment. Such parts as the one-piece camshaft, connecting rods, differential housing cover, and radius rod frame attachment—the last two calling for particularly intricate dies—the one-piece I-beam front axle, besides a large number of smaller parts, are all made by drop-forging. As a matter of fact, the plant is so completely equipped that everything but the wheels, tires, radiators, and side-frame members is turned out.

The chrome nickel steel crankshaft is another drop-forging of E. V. make which receives particular care. It is of the three-bearing type with an unusually liberal factor of safety in its bearing dimensions, the flywheel end bearing measuring 4-7-8 inches, while the center and front are 3 1-2 inches, the journal being 1 1-2 inches in diameter, which, together with the special grade of babbit employed, doubtless accounts for the manner in which this very essential part of the Columbia has always stood up. The flywheel fastening is unique in design; it consists of the usual flange, but the latter carries two dowels and six studs. All are of chrome nickel steel, and the studs are provided with thimble ends which are screwed into the flange and riveted into countersunk recesses, then being finished flush. They correspond with holes in the flywheel casting which is held snug against the flange by six castellated nuts. The one-piece camshaft operates the valves by the direct thrust method, while the timing gears are of the spiral type with a 1-inch face cut at a 10 degree angle.

About the Motor's Accessories.

Painstaking care has been devoted to the design of the motor's accessories, the handling of the fuel and oil not alone being made as simple and efficient as possible, but likewise economical. The carbureter, which is one of Mr. Law's special designs, has a double jet, the smaller opening of which is controlled by the governor and affords speeds up to 25 miles an hour with excellent fuel efficiency. This spray jet is also controlled by the hand throttle, and is suitable for all ordinary running, giving 15 to 16 miles to the gallon of fuel. The large jet is entirely independent, and is controlled by an accelerator pedal; it is intended only for speeding. A constant circulating type of lubrication is provided, a gallon or more of oil being carried in a small cylindrical tank hung from the frame. From this it is pumped through a stand-pipe, the height of the motor, from which it is discharged to all the bearings and is then returned to the tank. A bleeder consisting of a 2-inch glass cup is located on the dash and connects with a short shunt tapped into the stand-pipe two or three inches from its return bend, so that the presence of oil in the

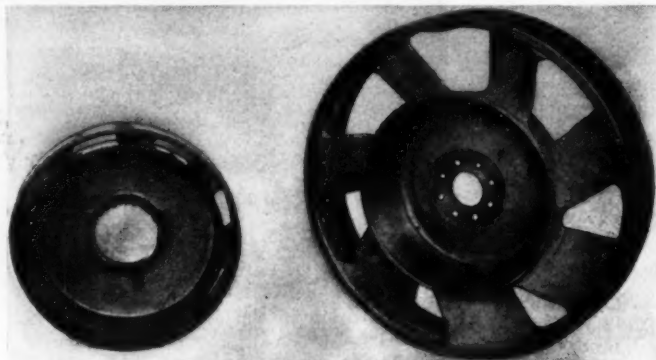


Some of the Drop-forgings Made in the Home Plant.

glass is a certain indication of its circulation. The connecting rod big ends are provided with adjustable scoops to facilitate the splash, the crankcase being cast to form baffle plates to prevent excess oil finding its way into the cylinders. Ignition is by low-tension Bosch magneto, the design of the lens-bar having been considerably improved over previous models.

The Transmission and Running Gear.

The clutch is of the plain conical leather-faced type, while between it and the propeller shaft is a three-speed selectively operated gear-set running on Hess-Bright bearings. In its control this gear-set is unique in that the hand lever, instead of picking up supplementary levers in the housing, engages with small rocking levers placed in the sector itself. Shifting laterally engages these by means of a square jaw formed on their upper ends, when the

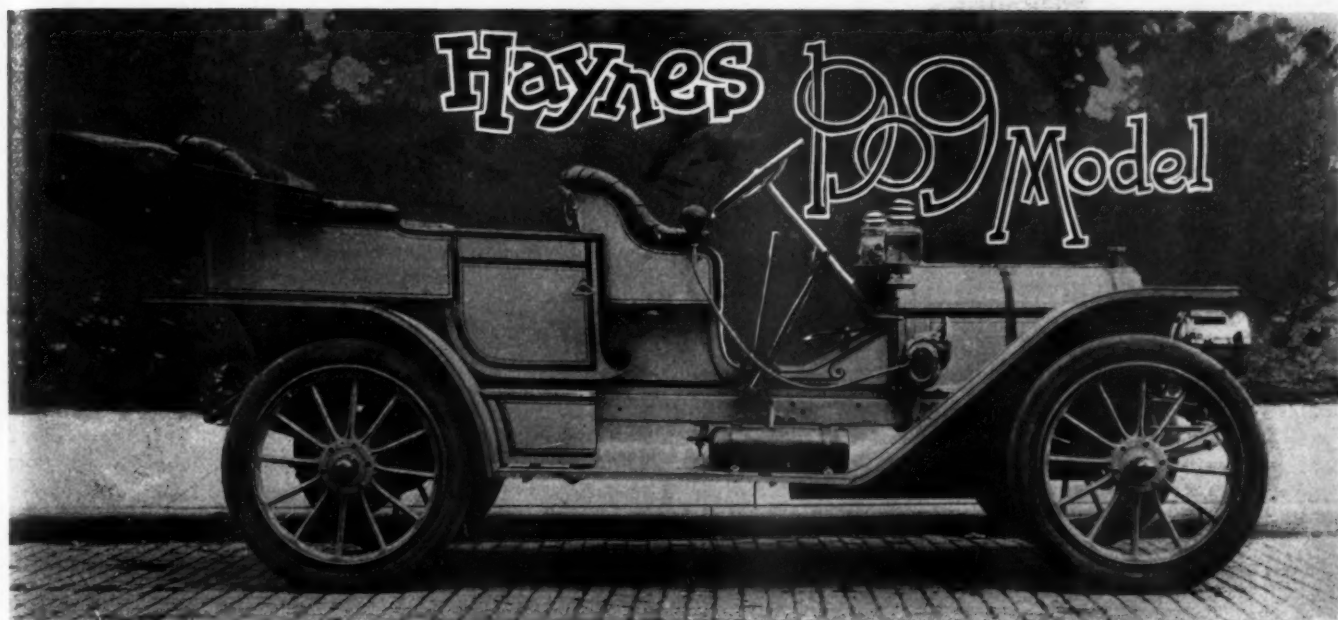


Fan Spoke Cooling as Applied to Flywheel and Brake Drum.

different speeds may be obtained by moving backward or forward an arrangement that works very easily and is proof against sticking. The universals used between the clutch and gear box and on the propeller shaft are of the yoke type and are turned out in the home factory, as are also both the steering gear and the entire rear axle driving unit, with the exception of its Timken bearings, which are also used in the wheels.

In order to make an absolutely rigid member of the rear axle, the tubes are brazed into the housing in the rough. The axle is then placed in a hydraulic press and the center pressed downward slightly. This lack of alignment is then corrected by the press rod, the turn buckles of which are permanently pinned in place, once the axle is straightened. By this means opposing stresses are set up which tend to keep the axle rigid. The entire axle is then placed in a lathe and the wheel ends turned, following which it is clamped in a jig and bored both ways, thus insuring absolute accuracy of alignment. In the case of the motor, this is accomplished by clamping the support in a jig and running long reamers through the openings for the bearings, while similar accuracy of alignment of the motor and gear-set supports on the frame is obtained by placing the latter complete in a jig with the brackets and cross braces assembled in the rough. The supports are then milled to a level face.

Another excellent feature is the assembly of the brake drums and rear wheels before boring. They are thus turned directly on the cups for the Timken bearings, which makes for absolutely true running. These drums are not only of unusually liberal dimensions, but also have an air space between the internal and external bands, with fan-shaped spokes or braces, similar to a flywheel. The front axle is a one-piece die-forging of nickel steel, specially heat-treated; suspension is by means of semi-elliptical front and rear, the dimensions not having been altered since last year, although the wheelbase has been increased to 115 inches and 34-inch wheels adopted. The Hartford rim and Hartford tires are fitted, 3 1-2-inch front and 4-inch rear, though the make is optional. A five-passenger touring body or a limousine fits this chassis interchangeably. The company is also building a car with a 5 1-2-inch "square" motor with an A. L. A. M. rating of 48-horsepower and four-speed selective gear with shaft drive, but will only turn them out as ordered.



THE Haynes Automobile Company, of Kokomo, Ind., will build only one model for 1909—a four-cylinder 40-horsepower car to be known as Model X. This is the successor of the 1908 Model W. The Haynes Company found that this model, medium in both power, size and price, appealed to by far the greatest number of purchasers, and decided that better results could be obtained by concentrating the entire factory organization on this one type. Models S and U were therefore discontinued. It has now been found possible to make many improvements on the original design without raising the price from the 1908 figure, \$3,000.

The Motor of Familiar Design.

No one in the least acquainted with former Haynes models will fail to recognize the motor. The cylinders are 4-3-4 by 5 inches bore and stroke, and are cast in pairs, with valve pockets on opposite sides. The valves are of unusual size, 2-5-8 inches in diameter; the heads are nickel steel electrically welded to the stems. Each piston has three composite rings; these consist of a heavy, plain ring, on the outside of which are two thin rings, broken at opposite sides and pinned quartering the break in the inner ring. The latter provides the expansive force, while the thin outer rings conform perfectly to the shape of the cylinder. The combination is unsurpassed for the holding of compression, and yet is very free in action. The crankshaft is turned from a heavy bar of vanadium steel, which has previously been roughly forged to shape. It runs on double sets of conical roller bearings at each end and a center bearing of Parson's white bronze.

The right-hand forward arm of the crankcase is cast in box shape, and in it is embodied the McCord oiler, gear-driven from the inlet camshaft. The corresponding arm on the op-

posite side is used as an oil reservoir, and is connected with the gang of pumps by a small passage in the forward part of the case. This allows an ample supply of oil to be carried for long tours. The lower section of the crankcase is divided into four separate pits for the cranks, so that the oil cannot all run to one end when on a grade. The two-to-one gear, as well as those driving the oiler on one side and the magneto and water pump on the other, are carried in a separate compartment and packed in heavy oil, thus reducing their noise to a minimum.

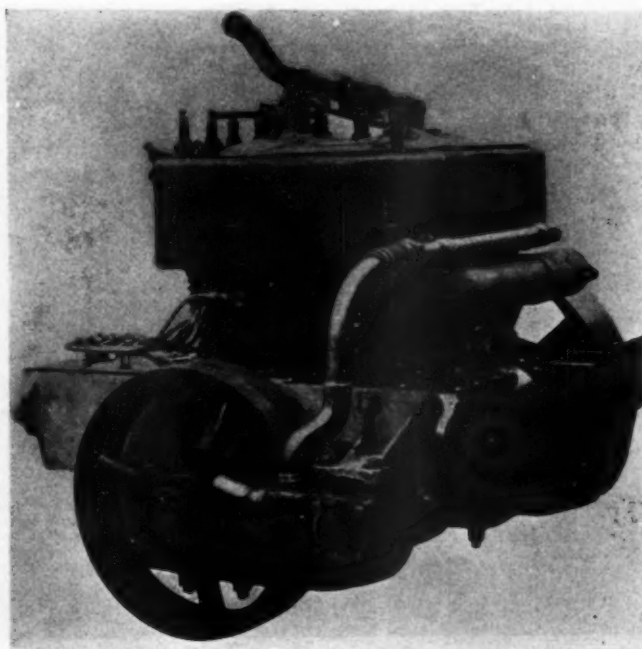
Two systems of ignition are provided, each entirely separate and distinct from the other. A dry-cell battery gives current for one, and a single coil with high-tension distributor completes the outfit. The other is a high-tension magneto, located on the left side of the motor. The two sets of plugs are both placed directly over the inlet valves.

The water pump is of the eccentric type, which the Haynes Company has retained after many years of experience. There are comparatively few moving parts, and their movement is very slight; it has the additional advantage of giving a positive circulation.

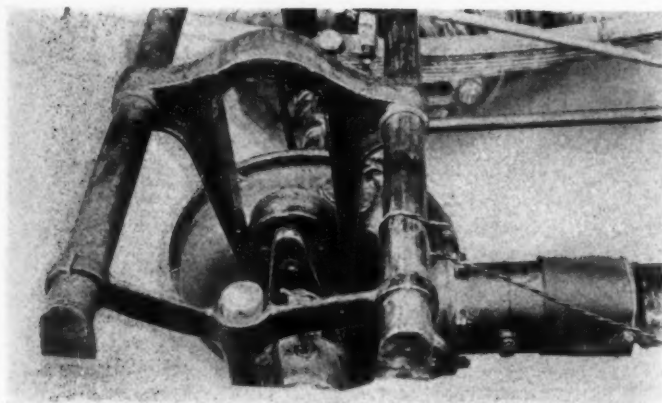
Clutch and Master Gear.

The clutch is of the contracting band type, and is similar in action to the ordinary brake. It works on a bronze drum, which is supported in the flywheel by four arms forked at their outer ends. These forks straddle corresponding lugs on the inner side of the flywheel rim. Between each lug and the ends of the fork on either side coil springs are interposed, thus forming a shock absorber between the motor and the change-gears to eliminate strains attendant upon the sudden engagement of the clutch.

The change-gear gives three speeds forward and one reverse, controlled selectively. The master gear on the countershaft drives through a ratchet; in shifting from a higher



Front Quartering View of Haynes Motor with Double Flywheel.



Haynes Improved Roller Torsion Lever.

to a lower gear, this allows the car to run ahead of the motor until it slows down to a speed corresponding to that of the latter. It is thus impossible for the momentum of the car to be exerted through the gears, and in consequence gear-stripping has been practically eliminated. The bearings of both main and counter-shafts are specially designed rollers, and they are carefully fitted with stuffing boxes to prevent leakage of oil.

The universal joints of the drive shaft consist of three parts—two heavy steel yokes and a square steel block. The yokes have large flat inner surfaces which bear on opposite sides of the block. Cross pins hold the block in place, but the driving strain all comes on the broad surfaces. The joints are both covered with heavy leather boots to protect them from dust and mud.

The Roller Pinion and Sprocket Drive.

The method of power transmission at the rear axle is peculiar to the Haynes, and is fully covered by patents. Instead of the usual bevel gear and pinion, a device is used which is known as a roller pinion and sprocket. The driving member consists of a shaft with two integral flanges, between which, at proper intervals, pass large steel pins. The pins in turn carry rollers, which engage the large, coarse teeth of the sprocket ring on the differential. It is, in fact, a bevel gear with roller-bearing teeth. Practically the only parts which ever show any wear are the pins and rollers, and these can be easily and cheaply replaced.

Instead of the usual torsion rod the Haynes employs a torsion roller. It is carried on a heavy arm projecting upwards from the differential casing and works in a slotted guide supported by the main frame, deep enough to allow it to move up and down with the action of the springs.

The two separate sets of brakes are both contracting and are located side by side on the rear hubs. The drums are 14 inches in diameter; the bands of the foot brakes are 11-4 inches wide, and those of the emergency 11-2 inches. The drums are hollow and may be filled with water if desired; thus they will never overheat, no matter how strenuous the service.

Choice of Body Equipment.

The touring body which is regularly provided seats five persons, but there is sufficient room in the tonneau for side

seats accommodating two other passengers. The front seat is divided. All bodies are made of wood, carefully selected and seasoned. In the upholstery, nothing but the finest of hand-buffed leather and gray curled hair is used, together with the most up-to-date springs. On the runabout the seats are placed about six inches further back and are quite low; the dash is hooded. This type can be equipped with either one small rumble seat on the rear box, two small seats, or two full-sized seats.

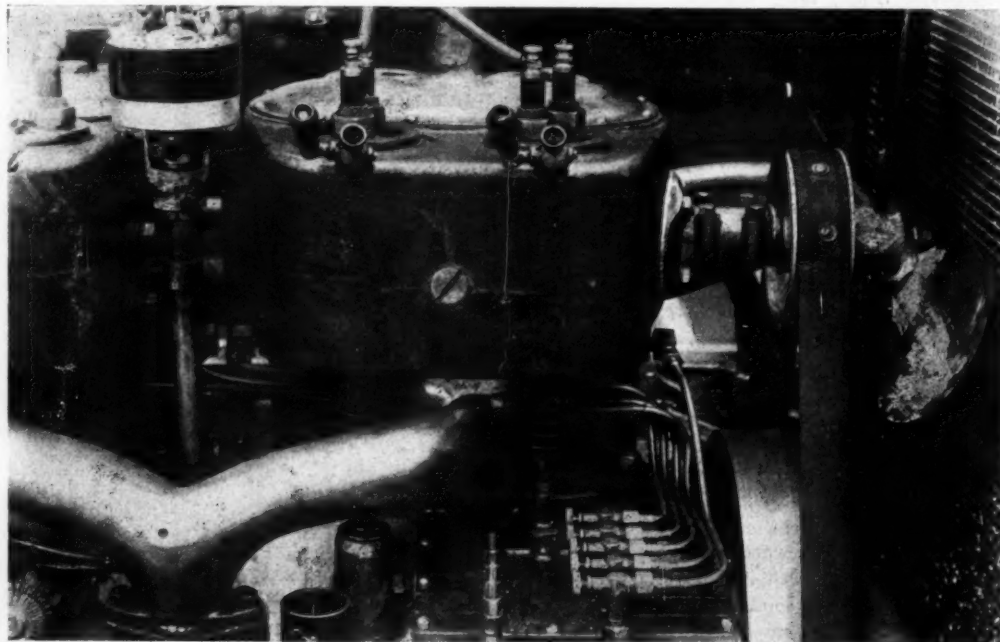
Still another type is euphoniously named the "Hiker"; it is much the same as the runabout, except that it accommodates two passengers only. The seats are set very low and tilted up about an inch and a half higher in front than in back. Behind the seats is a large cylindrical gasoline tank. Last of the line is the toy tonneau; this is simply a four-passenger touring car. The front seats are placed in the same relative position as on the runabout, thus shortening the tonneau space. The rear seat is narrowed to a width suitable for two passengers. This style of body is made to meet the demand for a light, comfortable, four-passenger body to be fitted to a regular chassis.

COOK JOINS FEDERAL RUBBER COMPANY.

CUDAHY, WIS., Sept. 28.—Otis R. Cook, who for twelve years occupied the position of general representative for the B. F. Goodrich Company in its tire department, and for the past two years held the same position with the Firestone Tire and Rubber Company, left the latter company October 1 to accept the position of general manager of the Federal Rubber Company's tire department, of this city. Mr. Cook states that this is a new departure for the Federal Rubber Company, which is a large manufacturer of mechanical and molded rubber goods, and will add to its line pneumatic automobile tires, solid motor and truck tires, solid rubber carriage tires, also a full line of bicycle tires and accessories.

Mr. Cook has associated with him Osborne S. Tweedy, who will occupy the position of sales manager, and who will look after all matters pertaining to the sales at the factory. Mr. Tweedy needs no introduction to the trade, having been connected with the Diamond Rubber Company for fifteen years as manager of that company's Chicago branch.

The Federal Rubber Company announces that it will put on the market the highest class of automobile and motor truck tire that is possible to produce and that its pneumatic auto tire will be sold to manufacturers and jobbers under special trade marks.



Inlet Side of Haynes Motor, Showing Oiler; Oil Tank on Opposite Side.

THE 1909 MODELS OF THE TWO-CYCLE ELMORE

ALTHOUGH numerous changes have been made both in design and mechanism, the 1909 Elmore two-cycle models will be practically a continuation of the 1908 models 30 and 40. The appearance of the cars has been considerably improved by lengthening the tonneau and raising the radiator and hood to bring them into proper proportion, and there are a number of refinements in detail.

The motor remains the same Elmore valveless two-cycle which has had such marked success in the past, with three cylinders on

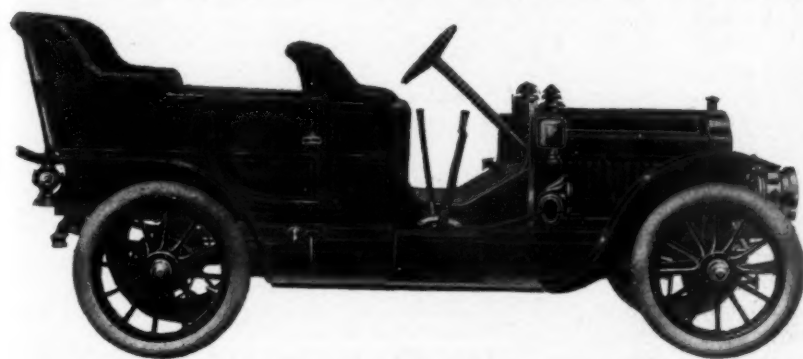
which the Elmore company says has far exceeded all claims or expectations, is now driven directly.

The clutch mechanism has been considerably improved and simplified by placing the actuating spring directly behind the cone. The Brown-Lipe selective change-gear, with annular ball bearings, three speeds forward and reverse, is retained, but the support is now by integral arms, instead of from crossbars. The drive is through shaft and Spicer universal joints, which have given perfect satisfaction in the past.

The front axle, of the drop forged I-beam pattern, has been modified to allow the lowering of the frame about two inches. Exhaustive tests have resulted in the retention of the rear platform springs, though a new form has been adopted that gives much softer action, regardless of the load in the car. The new springs are very finely graduated, with an increased number of leaves thinner in proportion.

The general lines of the Elmore body remain unchanged. The popular straight back, with rounded corners, is retained in the three-cylinder model. The tonneaus of both models have been lengthened, and special attention has been given to the upholstery. Mahogany dash and trim are used on the three-cylinder and Circassian walnut on the four.

The height of the radiator has been increased 1 1/2 inches, not to afford larger cooling surface, but to bring the hood into better proportion with the rest of the car. Model 44, which is shown in the illustration, has a wheelbase of 112 inches, and 34-inch wheels shod with 4-inch tires. Model 33, the three-cylinder, resembles it in outline, and has a 104-inch wheelbase and 32x3 1/2 tires. An addition to the Elmore line is a landaulet mounted on the three-cylinder chassis. The roadster has been changed considerably in general style, and is furnished with two sets of rear seats, one single and one double. Thus the roadster may be called three cars in one; it may be used with flat deck, with single or with double seat.



Model 44 Four-cylinder Two-cycle Elmore for 1909.

the 30-horsepower model and four on the 40-horsepower. The cylinders of both are 4 1/2 inches bore and 4 inches stroke. Perhaps the most radical change is the offsetting of the cylinders on the crankshaft to give a more direct downward thrust on the power stroke. The performance of the new motor shows a decided improvement over former models, both in power and steadiness. The carbureter is the regular Elmore float-feed automatic type. The lubricating system of the last two years is retained; the oil is fed into the inlet pipe, thus insuring its equal distribution in each cylinder. The side countershaft of the motor has been dispensed with, and the Atwater-Kent spark generator,

DETROIT MAKERS ENJOY UNUSUAL PROSPERITY

DETROIT, Sept. 28.—Prosperity is being spelled in large letters these days by Detroit automobile manufacturers and makers of parts and accessories. On every hand unwonted activity prevails. Plants are running close to their capacity, and orders for next season's cars are coming in before the present year's output has all been produced in a most gratifying manner.

Within another week the working force at the Cadillac Motor Car Company's plant will be doubled, furnishing employment to 1,600 more men, and permitting the concern to work steadily day and night in order to meet the demand for its new models.

At the plant of the Ford Motor Company everything is humming, and district managers in session here a few days since gave assurance of an increase of 100 per cent in the volume of business for next season. Every energy is being directed toward completing the new factory for the Ford, at Highland Park, just north of the city, and which will, it is claimed, be the largest

automobile plant in America. It is expected to be ready for occupancy by the first of the year.

The Everett-Metzger-Flanders Company, while just getting fairly started in the old plant of the Wayne, has already disposed of 6,000 cars, half of next season's anticipated output, through the Studebaker Company, and orders are coming in rapidly from other sources. Work will shortly be commenced on an immense addition to the present plant.

Of course, the Packard Motor Car Company is doing all the business it can care for the immense plant with its 3,500 employees being in full operation.

The Detroit-Chalmers is another concern enjoying its full share of the present prosperity, while the smaller concerns all report favorably on the outlook.

Parts makers are jubilant over the prospects, and the present year promises to be a successful one all the way around.

BALTIMORE TO HAVE AUTO AMBULANCES.

BALTIMORE, Sept. 28.—Motor-driven ambulances will be used by the local fire department service hereafter to convey injured firemen to hospitals, and for disabled horses of the department. On recommendation of Chief Horton, the fire commissioners have ordered two of these ambulances—one for men, one for the veterinary department.

AUTOS IN TOLEDO'S CIVIC PARADE.

TOLEDO, O., Sept. 28.—The automobilists of this city will participate largely in the civic parade to be held here the present week in connection with the annual fall festival. It is intended to make the auto division a leading feature of the procession to typify the advance of locomotion methods. The local club will add its influence, and a representative turn-out is expected.

BOOKS FOR AUTOMOBILISTS.

"The Amateur Motorist."—Max Pemberton is so well known as a writer of fiction that most readers would be apt to set his latest publication down at first glance as another addition to the long list of automobile novels of the "best sellers" class. Perhaps some will regret that it is not; for if we must have automobile novels, far better have them written by a master of the subject than by one of the type whose heroes "grasped the speed lever and the huge machine bounded forward" for twenty chapters. However, Mr. Pemberton's book is, as the name implies, simply a plain and sensible guide for the prospective automobilist.

The usual chapters are devoted to the exposition of the principles of the motor, carbureter, ignition, gears, etc., and these are written in a simple and non-technical style. Their only drawback is the constant use of English terms apt to be confusing to the average American. We are used to "tyres" and "petrol," but that "star-wheel" means a bevel gear is hardly so apparent. Following this comes some very good advice to the beginner as to the size and type of car to buy, whether or not to employ a chauffeur and, if so, how to keep tab on that gentleman, how much he should expect his car to cost for upkeep and much other useful information. Finally Mr. Pemberton catalogs all the best known English and Continental makes, giving the different models and sizes and the advantages claimed for each. Unfortunately this part, which was evidently very carefully done, will not be of much assistance to the American automobilist, as only a few of the cars described are known in this country and only one of them is of American manufacture. Chapters on motorboating and motorcycling are also included.

The volume is bound in plain and workmanlike style, as befits a text-book, and is illustrated with many full-page photographs of men and cars, as well as drawings explaining the text. The publishers in this country are A. C. McClurg and Company, of Chicago, and the price \$2.75.

"Road Preservation and Dust Prevention," by William Piereson Judson, C. E., provides a much-needed source of information on a subject which is being brought more and more to the attention of the public. The book should be studied by the road officials of every State and city in the country. It aims to furnish the information clearly and concisely, and is easy reading for anyone interested in the question. Much needless expense can be incurred and much damage done by attempts to use oils and other road binders without sufficient knowledge of the suitability of the material for meeting local conditions. Mr. Judson is a recognized authority on the subject, and has given details of many personal experiences. The book is published by The Engineering News, 220 Broadway New York City.

A "WORLD'S TOUR" OVER JERSEY HILLS.

MADISON, N. J., Sept. 28.—There is to be another automobile "tour of the world" among the hills of Morris county, N. J., this autumn, along the lines of the motor car trips for charitable objects promoted in the past by the fashionable folk of the Oranges and Montclair. The tour is to be the joint promotion of the Y. M. C. A. branches at Morristown and Madison and the Boys' Brigade and Girls' Club of Chatham, under the corporate title of the "International Touring Company," whose president is James H. McGraw, and the general manager is Herbert Strong.

The date set is Saturday, October 18. The route laid out covers some 15 miles. The cities to be visited are: "Madrid," J. H. McGraw, Madison; "Yokohama," C. M. Decker, Madison; "Berlin," F. C. Blanchard, Morristown; "Constantinople," L. B. Tompkins; "Damascus," Homer Davenport, Morris Plains; "Pekin," J. M. Gifford, Chatham, and "Washington," C. F. Wheeler. The national capital, which will be the starting point of the tour, will show the White House, a G. A. R. post, and a booth of Puritan maidens.

THE AUTOMOBILE CALENDAR.
AMERICAN.

Shows and Meetings.

- Dec. 31-Jan. 7.—New York City, Grand Central Palace, Ninth Annual Automobile Show, conducted by the American Motor Car Manufacturers' Association, with Exhibits by the Importers' Automobile Salon, Inc., Alfred Reeves, General Manager, 29 West 42d St.
Jan. 16-23.—New York City, Madison Square Garden, Ninth Annual National Show of the Association of Licensed Automobile Manufacturers. M. L. Downs, Secretary, 7 West 42d St., New York City.
Feb. 6-13.—Chicago Coliseum and First Regiment Armory, Eighth Annual National Exhibition, National Association of Automobile Manufacturers. S. A. Miles, Manager, 7 East 42d St., New York.
Mar. 7-13.—Buffalo, Second Annual Power Boat and Sportsman's Show, Convention Hall, Dai H. Lewis, manager, 760 Main Street, Buffalo, N. Y.

Races, Hill-Climbs, Etc.

- Oct. 1-2.—Indianapolis Two-day Reliability Run to French Lick Springs and Return, Indianapolis Automobile Trade Association.
Oct. 2-3.—New York City, Brighton Beach Track, 24-Hour Race, Motor Racing Association.
Oct. 6-9.—Chicago, 1,000-Mile Reliability Run, Chicago Motor Club.
Oct. 7-9.—Cleveland, O., Three-day Reliability Run of the Cleveland Automobile Club.
Oct. 10.—Providence, R. I., Narragansett Park, Race Meet, Rhode Island Automobile Club.
Oct. 10.—Philadelphia, Founders' Week Stock Chassis Race, 195 Miles, Quaker City Motor Club.
Oct. 10.—Long Island Motor Parkway Sweepstakes, Conducted by Vanderbilt Cup Commission.
Oct. 10.—Providence, Narragansett Park, Race Meet, Rhode Island Automobile Club.
Oct. 10.—Morristown, Madison, Chatham, N. J., Automobile Carnival and "Tour Around the World," under Y. M. C. A. auspices.
Oct. 17.—Hartford, Conn., Hill Climb, Automobile Club of Hartford. (Probable Course, Avon Mountain.)
Oct. 24.—Vanderbilt Cup Race, Long Island Course, auspices of Vanderbilt Cup Commission.
Nov. 26.—Savannah, Ga., Grand Prize Race, Savannah Automobile Club.

FOREIGN.

Shows.

- Sept. 24-Oct. 4.—Bourges, France, International Exhibition for Agricultural Motors.
Oct. 11-18.—Paris, International Congress and Public Exhibition on Roads and Road Making for Modern Locomotion, French Ministry of Public Works.
Nov. 28-Dec. 13.—Paris, Eleventh Annual Salon de l'Automobile, Grand Palais, Automobile Club of France (Pleasure Vehicles, etc.)
Dec. 20-28.—London, Stanley Show, Agricultural Hall.
Dec. 22-29.—Paris, Eleventh Annual Salon de l'Automobile. (Commercial Vehicles, etc.)
Jan. 16-25.—Brussels, Show Organized by Belgian Chamber Syndicate, Palais du Cinquantenaire.

Races, Hill-Climbs, Etc.

- Oct. 2.—France, Gaillon Hill Climb.
Oct. 11.—Berlin, Germany, Gordon Bennett Balloon Race, Aeronautical Club of Berlin.

UNJUST VERDICT AGAINST AUTOIST REVERSED

HARTFORD, CONN., Sept. 28.—Judge John Coats of the Court of Common Pleas is surely not a motorphobe or anything of like nature, for he has just set aside a verdict rendered the owner of a horse outfit which got in the way of a slow-moving automobile some time ago. The verdict was in favor of the horse owner, and was for \$150. Commenting on the above-mentioned verdict, Judge Coats says: "Upon a careful examination of the evidence, I cannot escape the conclusion that manifest injustice would be done to the defendant if the verdict in the case should be allowed to stand. In my opinion, the verdict is so manifestly contrary to the evidence that I cannot escape the conclusion that the jury disregarded the instruction of the court respecting the law in the case, or mistook the evidence, or were influenced by prejudice or partiality in reaching their verdict."

DETROIT ADOPTS THE PACKARD FIRE WAGON

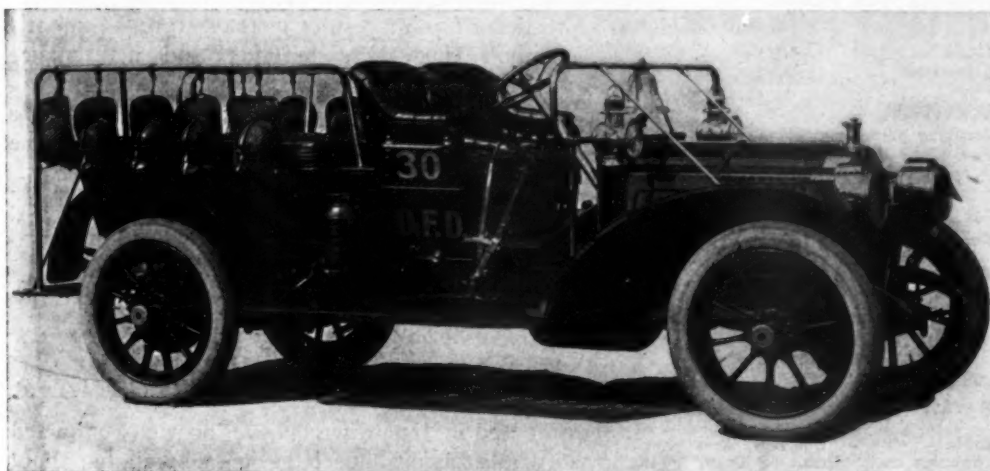
DETROIT, Sept. 28.—The Detroit fire department has inaugurated an automobile system which is not only a departure from ordinary fire department practice, but which promises such increased efficiency that the fire chiefs of all the large cities in the country are closely watching it. The new vehicle is a Packard "Thirty" touring car chassis converted into

the flying squadron, the purpose of which is to reinforce any regular company in the city in time of need.

The fire fighting forces of Detroit have been in need of enlargement for some time. Last winter the legislature passed an act authorizing an increased annual expense of about \$190,000. After considerable study of the proposition, the fire commis-

sioners decided to use automobiles and a small number of men, instead of a large number employed in the usual way. They therefore asked several automobile companies to bid on the manufacture of a special wagon which would have all of the speed and general efficiency of a high class touring car and at the same time be able to carry a normal load of twelve men. The contract was given to the Packard Motor Car Company, and last week the wagon made its debut as a fire-fighting machine.

The chassis is practically standard with the exception that it has heavier springs than the touring car, in order to take care of the additional load. The twelve men are carried, two on the front seat, six on the lengthwise seats of the tonneau, two on the rear running board and one on each side running board. Special handles are provided for the men on the running boards. Provision is also made for carrying three hand fire extinguishers, two on each side and one in rear.



Packard "Thirty" Fire Wagon, Placed in Service by Detroit Fire Department.

a fire wagon with a special body and equipment, making it suitable for carrying a squad of firemen about town with the speed of the fastest touring car. The truck is now located at one of the stations, but will eventually have a separate house built for it. It has its own organization of fifteen picked men, including captain and lieutenant, forming what is locally called

the flying squadron, the purpose of which is to reinforce any regular company in the city in time of need.

AN AUTO ENGINE AND HOSE WAGON COMBINED

INDIANAPOLIS, IND., Sept. 28.—The Independent Hose Company, of Frederick, Md., has recently installed a piece of apparatus manufactured in this city which differs considerably from other adaptations of the automobile for fire-fighting service. It consists of a hose wagon and fire-engine combined, and with its driver takes the place of an ordinary hose wagon, a steam fire engine, four horses, two drivers and an engineer. As a hose wagon it will carry 1200 feet of hose at a speed of from four to thirty-five miles an hour, and as a water-throwing engine it has the capacity of a third-class steamer. The chassis carries a six-cylinder automobile motor of 60-75-horsepower, connected with a six-cylinder eccentric-operated pump in such a way that the change from road-wheel drive to pump drive can be made by the movement of a lever.

At a recent test at Frederick, Md., before some of the leading mechanics and automobile experts of the State, it threw a 1-1/8 inch stream over a church steeple 150 feet high, and threw two 7-8 inch

streams 180 feet and three 3-4 inch streams 160 feet. Needless to say, that fire was settled in record time.

The manufacturer, the Howe Engine Company, of Indianapolis, is now building another machine of the same type which will carry two 35-gallon engines besides regular equipment.



Howe Auto Engine and Hose Wagon, Recently Installed at Frederick, Md.

THE AUTOMOBILE

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THE KIND OF EFFORT THAT COUNTS.

Such gatherings as that of the Associated Automobile Clubs of New Jersey held last week at Atlantic City, count more for the general good of automobiling than a score of high speed racers, and in this direction and similar channels the real work of the various State bodies of the American Automobile Association should be kept centered. Best of all, in the success of the good roads convention at the New Jersey seashore resort, the dominating feature was the hearty manner in which the State Grangers, freeholders, and county engineers entered into the proceedings; in fact, if anything, it was more their affair than that of the autoists, who filled the part of hosts and listeners, and obtained much instruction thereby. It was to be expected that the trade would do its share towards making the event possible, for one of the unusual things was the transporting in autos of the delegates from all parts of the State, and 'tis safe to say that not a few of the Grangers had their first autoing experiences and secured impressions not unfavorable to motor-driven travel.

First came the 1907 convention of the Automobile Club of Springfield, Mass., with its excellent motto of "Good Roads and the Sane Use of Them"; next followed, in July last, the national assemblage at Buffalo,

under A. A. A. auspices, and New Jersey has kept up the right kind of work with a few improvements that deserve special notice. There was no legislative talk at Atlantic City relating to the automobile itself; but the conventioners expressed themselves as being in favor of a law that would permit the visiting of the autoists of adjoining States, as long as they had gone through the registration necessity at home. That a decidedly more harmonious feeling exists, is a fact that admitted of no doubt at Atlantic City, and the understanding reached is an indication of joint results in the future. Supporting a common cause—the building and maintenance of up-to-date roads—the farmers and the autoists can bring about a system of highways which will put into the background those famous old Roman roads, and also the roads for which Napoleon gained so much credit. And the day is near at hand when the farmer will travel over those roads in an automobile, while "Old Dobbin" eats contentedly in the back lot, unannoyed by any regrets of the days which are gone.



WHY EVERY MAN SHOULD DRIVE HIS OWN CAR.

In Turkey and in Japan, we believe, no well-conducted gentleman would permit himself to be seen waltzing about a ballroom floor. Instead, when the mood comes upon him, he sends out round the corner and hires a troupe of dancers to disport themselves on his parlor floor. He leans back among the cushions and looks on. We copy the East in many ways; among other things, some of us hire chauffeurs to drive our automobiles.

This custom may arise either from laziness or from ignorance. It is possible that if the Turkish gentleman ever experienced the delights of gliding over a polished floor to the strains of the "Merry Widow," he would renounce for all time the traditions of his country and devote his fortune to the endowment of dancing academies. Likewise, if some of those automobile owners who now are content to loll in the tonneau, once took the wheel in their own hands for a fifty-mile spin on good macadam, the chauffeur would get his week's notice before the last dust cloud had settled.

Many persons, when it is suggested that they learn to drive their own cars, allege that they have no "mechanical bent." That excuse might have passed five years ago, but not to-day. Thousands of men draw both profit and enjoyment from their machines in chauffeurless bliss, who yet have only the vaguest of ideas as to what it is that purrs so gently under hood and footboards. Not that this state of mind is to be encouraged; but it does not often last. Many and many a time has the man who deplored his lack of mechanical inclination become a crank of the deepest dye, and even those who retain their mental perspective easily pick up the knowledge necessary to drive and care for the car. Really, there are few things simpler than the driving of an automobile. In a surprisingly short time it becomes as automatic as walking, and in no way detracts from the pleasures of the ride. This does not include learning to nurse the motor up each hill on high gear, or to drive sixty miles an hour on country roads, or to do acrobatic stunts in city traffic. But somehow, when an owner, ignorant of these accomplishments, has managed the car for a few months, the repair bills show a truly remarkable shrinkage.

JERSEY GRANGERS AND AUTOISTS TALK GOOD ROADS

ATLANTIC CITY, N. J., Sept. 26.—If the other State associations of the American Automobile Association will follow the plan of the Associated Automobile Clubs of New Jersey, they will quickly discover that the differences supposed to exist between the farmers and the automobilists are easily adjusted, for the needs of the two are certainly harmonious when it comes to the subject of good roads. And when farmer and autoist discuss the problems of highway construction and maintenance, they must inevitably touch upon the use of the roads, which means that both quickly recognize the rights of the other upon the aforesaid roads.

For two days members of the New Jersey State Grange, freeholders, and county engineers, and automobilists absorbed good roads from all points of view, the final summing up being of decided benefit and a generally better understanding all around. From various parts of the State the grangers, freeholders, and engineers were brought to Atlantic City in automobiles, thanks to the co-operation of the New Jersey Automobile Trade Association, with J. H. Wood as the chairman of transportation.

President W. C. Crosby, of the Associated Automobile Clubs, who presided during the greater part of the session, fell into the clutches of a speed trap while conveying three freeholders to the city by the sea. It might be mentioned that these three freeholders agreed thoroughly with the driver of the car that the speed limit was not being fractured to any alarming extent, and, incidentally, they obtained ideas on "trapping."

President Walter E. Edge and the other members of the Atlantic City Automobile Club did much to entertain the visitors, including "A Night in the Kitchen" at the Royal Palace Hotel, which entertainment Friday night was novel and very satisfactory up to a late hour.

Owing to illness, Governor Fort was unable to attend, and, therefore, his address did not follow the remarks of welcome, supplied by Mayor Stoy. But there were speakers in plenty, including some impromptu contributors, for there were general discussions after the fixed papers had been given.

Those Who Talked the Most.

The list of speakers included G. W. F. Gaunt, master of the New Jersey State Grange; J. M. Beldon, Essex County Road Drivers' Association; Frank Bergen, Elizabeth, N. J.; J. B. R. Smith, New Jersey Commissioner of Motor Vehicles; Deputy Road Commissioner R. D. Beeman, of Pennsylvania; James E. Owen, Newark, N. J.; George C. Diehl, Erie County Engineer, Buffalo, N. Y.; Deputy State Engineer Gettman, of New York State; Calvin Tompkins, New York City, and Allerton S. Cushman, acting director Bureau Public Roads, Department of Agriculture, Washington, D. C.

The more than 200 delegates applauded loudly when Granger Gaunt, before introducing the resolutions summing up the convention, said:

"We farmers are not opposed to the motor car; we realize that it is here to stay, and welcome both the automobile and its driver. We fully realize that it will revolutionize road transportation, and that it will be an important feature in making farm life more attractive. When the motor car becomes cheaper in price through more general use, the farmer will be the first to adopt it for business and pleasure. I stand ready to promise the automobilists that the grangers of this State will co-operate with them in bettering not only the condition of the roads but the lot of motorists, who, it appears, have been legislated against too severely."

Motor Vehicle Commissioner Smith in the course of his remarks said:

"Present road regulations have been rendered entirely inadequate by the great strides in development and improvement of vehicles. But if we expend out energy in antagonism, it is a

waste of time. Our duty lies not in attempting to oppose the opposition, but rather in showing them that our stand is correct and converting their opposition into support. In connection with this, it is well to remember that the power and usefulness of the great motor vehicles when used properly are only equaled by its destructiveness and uselessness when used improperly."

Mayor Linkroum, of Hackensack, was one of the supplementary speakers, and his remarks found much favor. Said he:

Farmers Will Soon Have Autos.

"The farmer of the future will have a motor vehicle to convey his product to market. When he gets this—and I don't believe it will be a question of more than five years—he can just as well live 75 miles from New York as two. Such an improvement will, therefore, enhance the value of farm lands and our farms will be worth at least \$200 an acre. Every dollar that the State of New Jersey expends for roads to-day will be gotten back in increased realty values. Within ten years I believe motor vehicles will be so reduced in price that the farmer can buy one to carry several tons for \$1,500. Just as soon as this is possible, the horse will go. It's a fact that you can buy a fair runabout to-day for \$400, and the price is decreasing all the time."

Col. Frederick Gilkyson, New Jersey State Commissioner of Public Roads, was the honorary guest of the convention, and in the absence of Governor Fort he read a paper prepared by the chief executive, who took occasion to refer most favorably to the proposed boulevard from Atlantic Highlands to Cape May.

Dr. Cushman made a stirring address, and in it asserted that the American farmer is paying annual mud taxes of \$250,000,000.

Frank Bergen, of Elizabeth, took a fall out of the present system of improving the present crooked roads instead of straightening the highways between important points.

At the concluding session of the convention representatives of various road building and dust prevention concerns were given an opportunity to set forth the merits of that which they speak for. This feature was not entirely unattractive, and might well be incorporated in future gatherings of a like character.

In making a success of the convention none worked harder than Secretary H. A. Bonnell, of the State body, while other prominent autoists on hand were: George A. Post, president of the North Jersey Automobile Club; D. R. Anthony, Automobile Club of Hudson County; Frederick H. Elliott, secretary American Automobile Association; Dr. J. H. English, ex-president New Jersey Automobile and Motor Club; Jacob Mason, of the New Jersey Automobile Trade Association, and other notables.

Resolutions That Were Adopted.

These were the resolutions, passed unanimously, summing up the sentiment of the meaty convention:

WHEREAS, It is the universal opinion, and particularly of this convention, that improved highways are a valuable asset to any State in its development and progress; and

Whereas, such highways are growing more and more to be the channels of communication and intercourse as well as of trade, be it

Resolved, That it is the opinion of this convention that the materials, so abundantly provided by nature along the various highways, be utilized, so far as is practical, in the construction of such highways and the development of such highways system.

Resolved, That this convention and the organizations represented pledge their support, moral and active, in all movements tending towards the improvement of our highways and the development of our system of highways.

All Users of Highways Should Be Courteous.

Resolved, That it is unanimous sentiment of the representatives of the various organizations here present, that not only is it right and proper, but it is also most expedient and of vital importance to the interests represented that all users of the highways, and particularly automobilists, should be extremely careful and always keen and alert to observe strictly all the courtesies and decencies

of highway travel and should make it their constant aim to persuade, or if necessary, to compel those who are inclined to abuse their privileges upon the highways to conform to those rules of fair and reasonable conduct which already govern the vast majority.

Resolved, That the State Highway Department be requested to issue in pamphlet form information as to the proper and most improved method of the care of unimproved highways.

Resolved, That it is the unanimous sentiment that a good roads convention should be held once each year in New Jersey.

Favor National Aid in Roads.

WHEREAS, The farmers of the United States, through their principal organization, the National Grange Patrons of Husbandry, favor the enactment by Congress of legislation providing for Federal appropriations for public highway improvement and maintenance; and

Whereas, the policy of national aid for road improvement is of great importance to all users of our highways and should be established by appropriate legislation at the earliest possible date; therefore be it

Resolved, That this convention endorses the proposition that a portion of the national revenues should be annually appropriated in aid of the construction and maintenance of improved public roads, and urges Congress to enact legislation for this purpose.

In Favor of Reciprocal Registration.

WHEREAS, We are convinced that New Jersey has lost much from motorists of other States, because of our refusal to allow the use of our highways without the securing of a yearly license, has affected many business interests in the State, we believe that a duly restricted reciprocal arrangement with other States would be to the best interests of all; and

Whereas, It is noticeable that considerable neglect is apparent in keeping many of the improved roads of the State in proper order, we respectfully recommend that a pamphlet be prepared by the State authorities on the proper and scientific repair and maintenance of improved roads and be distributed among the county boards of freeholders, supervisors and other interested officials.

Fees and Fines for Road Maintenance.

WHEREAS, The State has received a considerable sum of money from motorists for license fees and fines, which was supposed to revert to the repair of improved roads, but which, for various causes, has not been entirely appropriated; and

Whereas, It is understood that there is some doubt whether by existing laws such income can be so appropriated; be it

Resolved, That it is wisdom of this convention that the issue should be made very clear and that the entire income from this source should be reappropriated to the repair of State highways outside incorporated city limits.

COMMERCIAL VEHICLES IN FRENCH ARMY MANEUVERS

PARIS, Sept. 25.—Two army corps, comprising 100,000 men have been dependent on the automobile for their daily supply of bread during the period of sixteen days that the annual army maneuvers have been in progress. Two much experience has been obtained in army automobile transport service for there to have been any possibility of the troops being delayed for lack of supplies, but there is still much to be learned in the operation of large numbers of motor vehicles in convoys.

With headquarters at Vierzon, in the center of France, the seventy automobiles were divided into convoys each having a load capacity of from 40 to 50 tons of provisions per day. The routine was for all vehicles to load up at night, make a day-break start in convoys, reach the regimental headquarters 30 to 40 miles away, and there discharge their loads into the horse wagons distributing them to regiments at the fighting line.

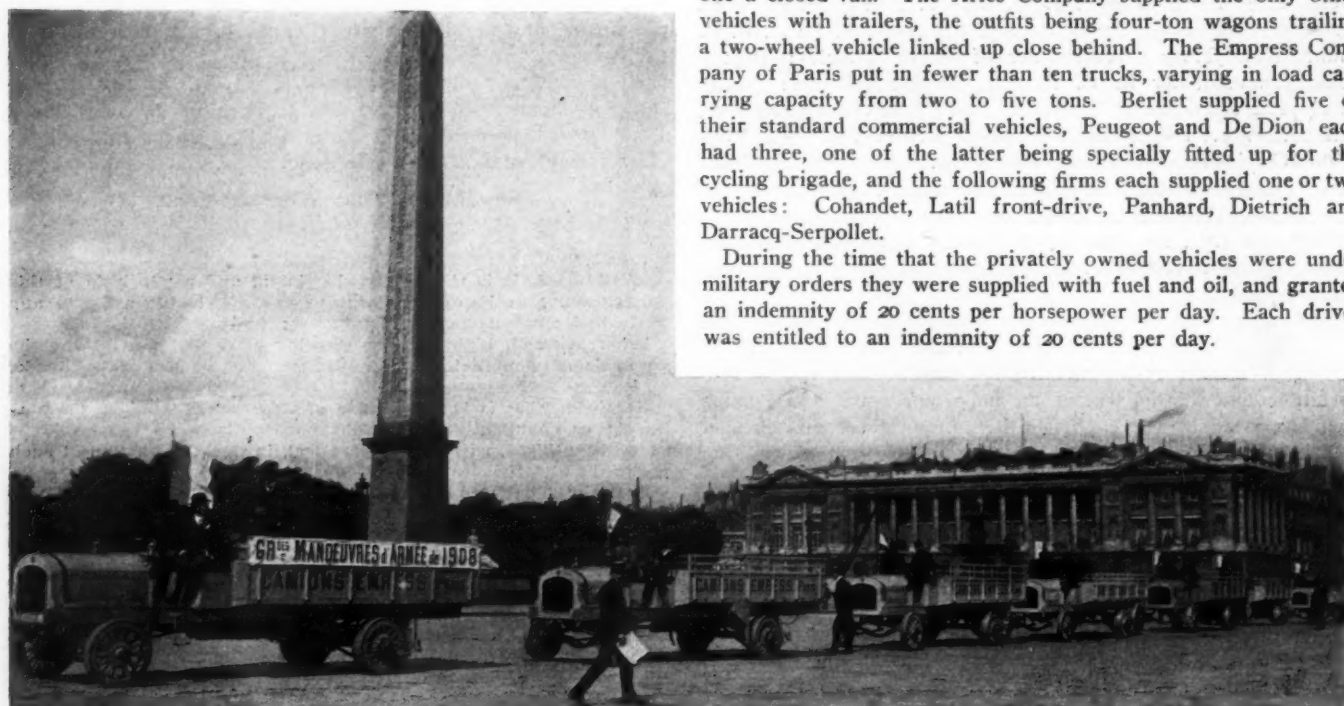
Unlike previous years, the officer in charge of each convoy was provided with a fast automobile, enabling him to run up and

down the line and assure himself that all the vehicles maintained their distances of 30 yards, and that there were no breakdowns on the road. In previous years the officer in charge has ridden on the leading vehicle, in which position he was able to set the pace, but had no opportunity of verifying the march of the following units.

The great majority of the military wagons were loaned to the authorities by manufacturers for the duration of the maneuvers only, the drivers being mechanics who were undergoing their period of military instruction. Only about twenty vehicles of various types were supplied by the War Department. The total number of commercial vehicles used during the maneuvers was seventy, this not including the fast touring cars employed by staff officers, or the motorcycles for carrying messages.

The most important units in the army automobile transport service were three Renard trains, each consisting of a tractor and three six-wheel trailers, two of them being open trucks and one a closed van. The Aries Company supplied the only other vehicles with trailers, the outfits being four-ton wagons trailing a two-wheel vehicle linked up close behind. The Empress Company of Paris put in fewer than ten trucks, varying in load carrying capacity from two to five tons. Berliet supplied five of their standard commercial vehicles, Peugeot and De Dion each had three, one of the latter being specially fitted up for the cycling brigade, and the following firms each supplied one or two vehicles: Cohendet, Latil front-drive, Panhard, Dietrich and Darracq-Serpellet.

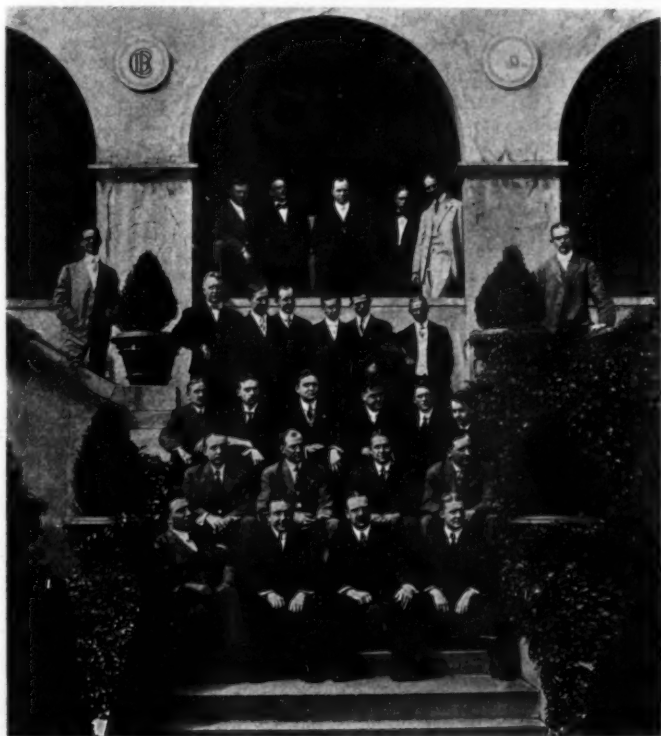
During the time that the privately owned vehicles were under military orders they were supplied with fuel and oil, and granted an indemnity of 20 cents per horsepower per day. Each driver was entitled to an indemnity of 20 cents per day.



Commercial Vehicles Leaving Place de la Concorde, Paris, at the Start of the Recent Trials.

ANNUAL MEETING OF FORD MANAGERS.

The Ford Motor Company has made a point of annually assembling all their branch managers at the home office in order that the business of the past year may be discussed and new plans formulated. The convention of 1908 was called for September 15, 16 and 17, at which time the following members of the Ford clan answered to the roll call: H. B. White, Paris; B. M. Thornton, London; R. M. Lockwood, New York City, Foreign Department; F. R. Fox, Toronto; G. M. McGregor Walkerville; C. E. Fay, Boston; Gaston Plantiff, New York City; L. C. Block, Philadelphia; E. R. Stearns, Buffalo; M. D. Coate, Cleveland; H. Cunningham, Detroit; T. Hay, Chicago; W. C. Anderson, St. Louis; Charles Hendy, Denver; C. C. Meade, Kansas City; R. P. Rice, Seattle. The reports from all the agents were encouraging, especially about the prospects for 1909, and all managers pledged themselves to double the sales for the coming year. Besides the business meetings and time spent inspecting the new Ford product, model T touring car, each day found some form of entertainment provided which helped to make this annual gathering of the Ford interests the most successful meeting ever carried out.



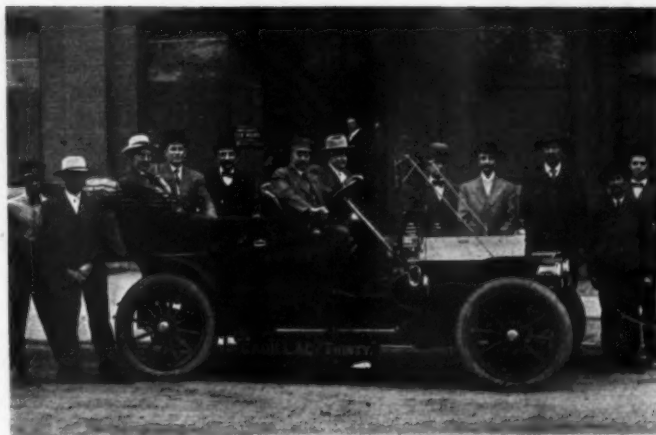
Annual Convention of the Ford Branch Managers.

Top row, from left to right—John Dodge, John Anderson, Ed. Dodge, Frank Kulick, D. Gray; second row—L. A. Holmes, James C. Couzens, F. M. McGregor, F. R. Fox, Stanley Roberts, N. A. Hawkins, Henry Ford; third row—R. M. Lockwood, M. D. Coate, H. B. White, W. C. Anderson, Charles Hendy, H. B. Harper; fourth row—R. P. Rice, Thomas J. Hay, Roger Stearns, Harry Cunningham; bottom row—L. C. Block, Gaston Plantiff, C. E. Fay, C. C. Meade.

SALE OF TOLEDO POPE PLANT.

TOLEDO, O., Sept. 28.—Announcement has just been made that a deal has been practically closed whereby D. B. Apperson, Lynchburg, Va., becomes owner of the Toledo plant of Pope Syndicate, known as the Pope Motor Car Company, and, further, that arrangements have been made whereby the factory will be run to full capacity.

Mr. Apperson first tried to acquire the plant several months ago but negotiations fell through, and they have been renewed several times during the interim until now all details have been arranged. Just what settlement will be made with the creditors is unknown as yet. An offer was made of 33 1-3 per cent. some time ago, and only this week an offer was made of twice that amount, the offer coming from some Hartford, Conn., concern.



Iowa Business Men Trying Out 1909 Cadillac "Thirty."

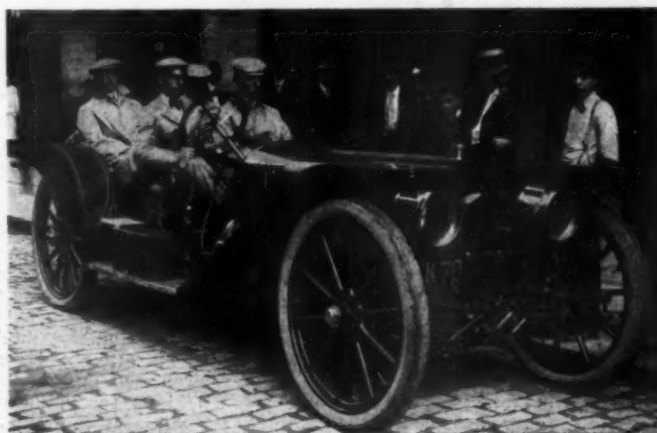
SELLING METHODS BY A WESTERN AGENT.

All sorts of original schemes have been produced by automobile agents to get the prospective purchaser interested in the particular machine they were selling. The latest stunt in this line comes from Cedar Rapids, Ia., where the local agent for the Cadillac, G. H. Henderson, had a number of business men in line for the 1909 model Cadillac "Thirty," but had been unable to get a demonstrating car. These future owners becoming anxious to see the new product, the agent chartered a Pullman sleeper for Detroit and filled it with Cedar Rapids citizens. The next morning, on arrival in Detroit, the party was immediately taken to the Cadillac factory, where enough machines were supplied to hold all, and they were shown the city at the same time the new car was being demonstrated.

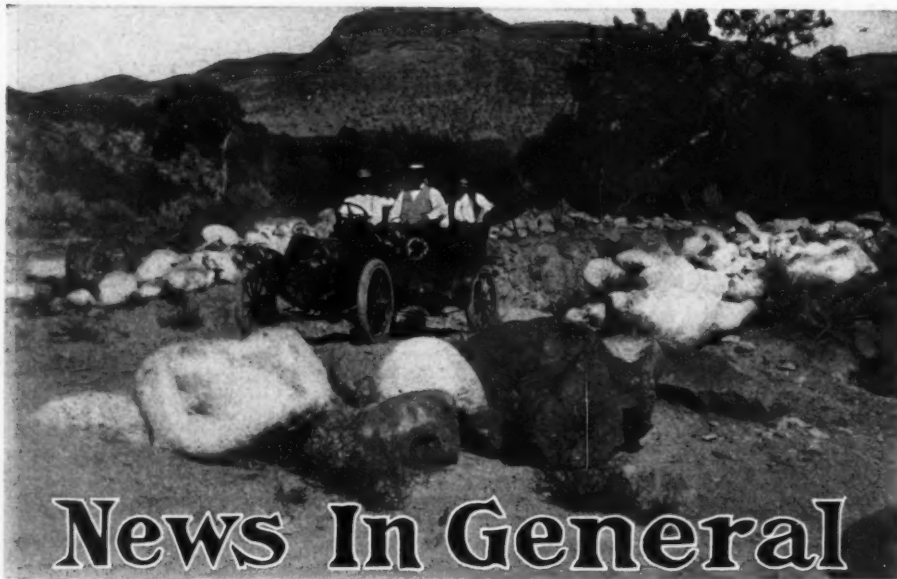
FAST TRIP OF THE AMERICAN TRAVELER.

INDIANAPOLIS, IND., Sept. 26.—A 1909 American of the "Traveler" type recently finished a remarkable 2,500-mile trip from Indianapolis to Boston and return. The trip was made under actual touring conditions, the car carrying four passengers, baggage, extra tires and complete road equipment. No attempt was made at long-distance speed records, although the car proved its ability to maintain speed remarkable for a machine weighted down as it was. Stops of a day—frequently two—were made in cities.

The route eastward led through Cincinnati, Pittsburg, Philadelphia and New York, and on the return through Albany, Buffalo and Cleveland. The trip between Johnstown, Pa., and Philadelphia—a stretch of rough mountain roads, crossing the highest ridge of the Alleghanies—was made in eleven and one-half hours, and from New York to Springfield, Mass., the distance was covered in eight hours and fifteen minutes without a stop. V. A. Longaker, president of the American Motor Car Company, and Fred I. Tave, the designer, alternated at the wheel.



Designer Tave (at wheel) and President Longaker (In rear seat) in the 1909 American Traveler.



E. W. Jordan and Party in Franklin Car on Hunting Trip in Colorado.

A Rocky Mountain Hunting Trip.—Even the humble burro is being replaced by the automobile. When E. W. Jordan, of Palisade, Colo., and a party of friends set out on a hunting trip into the heart of the Rockies they pressed into service a Franklin touring car. The run of forty-eight miles from Palisade to the hunting grounds was made with comparative ease, although over almost impassable roads, up and down steep mountainous grades; the last twelve miles led over a trail where no vehicle had ever before passed. In addition to the party of five, a complete outfit weighing about 500 pounds was taken along. A mountain lion and several wildcats and coyotes were bagged during the hunt.

Renault Trucks in America.—Paul Lacroix, general manager of the Renault Frères branch in New York, announces that the Renault trucks have met with such favor abroad that the company has decided to bring out two distinctly new types for 1909. The larger truck, with a carrying capacity of 3,500 pounds, will have a 14-20-horsepower four-cylinder engine, and the smaller truck a 10-14-horsepower two-cylinder engine of 2,000 pounds. The first American order has been placed with the New York Herald for seven of the larger type and one of the smaller, to use in their delivery service around the city.

Useful Advertising Signs.—During the summer a Chicago man while touring through New England lost his way one night near Springfield, Mass., and happening to notice some advertising signs near the road found that they had been put up by the Fisk Rubber Company, at Chicopee Falls, just out of Springfield. The tourist concluded that these signs would lead him into the city, which they did, as they are placed at frequent intervals on the trees and fences. This instance goes to show that such signs are not always as objectionable as some people think.

Studebaker Company Well Equipped.—The Studebaker Company has just completed a successful test with their new auto buggy and feel that with this added to their already large variety of motor vehicles, they are about the largest manufacturers of automobiles in the country. Dr. E. Ford, of the Studebaker Company, does not see how the product for the present can be improved upon, as they are now

building everything in the gasoline line from the auto buggy to the finest of limousines; and in the electric field everything from the small runabout to the heaviest trucks. He seems to think that the only way to enlarge will be for the company to go into the airship business and bring out a complete line of dirigible balloons and aeroplanes. "However," says Dr. Ford, "until the demand for airships is more urgent than at the present time, we will probably concentrate on automobiles, but don't for a moment think that should the demand arise we will not be perfectly ready to build as complete a line of airships as we now have in automobiles."

Autos in Waterway Convention.—Ira M. Cobe, president of the Chicago Automobile Club, has sent out a call for 1,000 automobiles to be used on the afternoon of October 9 to show the waterway convention delegates around the city. The club sent out return postal cards to all the members, asking for the loan of their machines, and half the required number have already been promised. During the convention the Chicago Association of Commerce will have as its guests both William H. Taft and William J. Bryan.

Again the Farmer.—Word comes from Manchester, Conn., that a farmer in that vicinity has been showing his neighbors that to farm it in these times one should own an automobile. This individual acquired an old touring car which he was able to fix up in shape to do all that he demanded of it and this year when the potato crop was gathered the other farmers carted them to cellars for storage, while he went them one better and hauled his to Hartford in about the same time they were spending storing theirs away.

New Los Angeles-San Diego Record.—On September 23 L. D. Harvey, of the San Francisco branch of Thomas B. Jeffery & Company, lowered the record for the round trip of 335 miles between Los Angeles and San Diego by one hour and six minutes, making the distance in 11 hours and 22 minutes. Harvey used the same car, a Rambler model 34-A, that he used in his attempted record run between San Francisco and Los Angeles when he was held up for violating the speed laws.

Firestone Company's Clever Plan.—All sorts of methods have been resorted to by the tire manufacturers to produce a tire

that would not skid, but it has been left to the Firestone Tire & Rubber Company, of Akron, O., to make use of a very clever scheme which they claim makes the nearest approach to a non-skid tire on the market. This new tire has the name "Firestone Non-skid" placed in raised letters around the body of the casing so that the name itself tends to prevent skidding.

New Continental List.—The Continental Caoutchouc Company has issued a booklet announcing a new schedule of prices, with considerable reductions from the former figures, which went into effect September 21. It also contains instructions for the use of "Ready-Flated" tires and the handling of the removable rims. The Continental motto is still "The greatest amount of mileage at the least tire expense."

Still Another Use for a Car.—With a view to economy of a great deal of time, the head gardener, Charles E. Murray, at Washington University, St. Louis, purchased a Ford roadster to take the place of a horse which he had been using for mowing the lawn. Hitching the mower on behind the machine he now does the work of mowing the 130 acres in a few hours, while the horse took at least two days.

Oakland Joins A. M. C. M. A.—The latest recruit to the membership of the American Motor Car Manufacturers' Association is the Oakland Motor Car Company, of Pontiac, Mich., makers of the Brush runabout. The officers of this company are: President, E. M. Murphy; vice-president, A. P. Brush, and sales manager J. B. Ecclestone, of Buffalo.

Continental Tires in India.—During the past three months a Stella car fitted with Continentals made a 5,000 mile tour in India, Malay Peninsula, China, and Java, over roads that had never been attempted before in an automobile. During the entire trip the tires were not touched once, rather a remarkable experience under any conditions.

Louisville Will Have Taxies.—The success of the taxicab in many of the large cities has led John Roche, W. E. Coldway and L. K. Delph to organize a company which will maintain a service in Louisville. The new firm, the Louisville Taxicab Company, has been incorporated with a capital stock of \$5,000.

Auto Service to Briarcliff.—An automobile coach service has been inaugurated between the Manhattan Hotel, New York City, and Briarcliff Lodge, in Westchester County. It is intended that the service will be maintained throughout the Fall, two cars a day being run each way.

IN AND ABOUT THE AGENCIES.

Oldsmobile, Philadelphia.—The Olds Motor Works, heretofore represented by the Motor Shop, 317-319 North Broad street, Philadelphia, has established a branch house, which was put into operation October 1. A portion of the newly built structure at 231-233 North Broad street has been secured, and "Billy" Taylor, former factory representative of the Oldsmobile in the Philadelphia territory, has been appointed manager. This territory will include, besides Eastern Pennsylvania, all of Delaware, Maryland, Virginia, the District of Columbia, and the southern half of New Jersey. Manager Taylor has announced that it is the policy of his company to open sub-branches and agencies in all the principal cities of this territory, and that within a short time a regular factory branch will be established in Pittsburgh.

Pope-Hartford, New York.—The sale of Pope-Hartfords in New York City is now in new hands. The Pope Manufacturing Company has given the metropolitan agency for its product to the Pope-Hartford Auto Company. The new agency has leased and is now in possession of the former quarters of the Wayne, at 1853 Broadway, near Sixty-first street. At the head of the concern is B. E. Holt, a gentleman of wide commercial experience, though not, however, previously associated with the automobile business. His associates, B. E. Fincke and C. A. Dickson, respectively treasurer and secretary, are well known to the industry through prominent connection with the local trade at Newark, N. J.

G. & J.—The newly organized Berrodin Rubber Company has purchased the Philadelphia Auto Tire & Rubber Company and its Buffalo branch, and will continue the G. & J. agencies in both cities. The Berrodin Company is about to be incorporated.

"E. M. F." Philadelphia.—Foss & Hughes, northeast corner of Broad and Race streets, have acquired the Philadelphia agency for the E. M. F.

PERSONAL TRADE MENTION.

W. J. Smith ("Rambler Bill," so-called from his long connection with Rambler interests in Philadelphia) startled the Quaker City "Automobile Row" last week by announcing his resignation as manager of the local branch of Thomas B. Jeffery & Co. He had been identified with that company for nearly fourteen years. Mr. Smith has signed a contract with the Maxwell-Briscoe Motor Company as district sales manager, with a distributing branch in Philadelphia and territory including Pennsylvania, Southern New Jersey, Delaware, Maryland, Virginia, West Virginia, Eastern Ohio, North Carolina, and the District of Columbia.

Martin Gillet Gill, Sr., one of the most prominent automobile dealers in Baltimore, Md., recently died of heart failure at his home on Ridgewood avenue, Roland Park. He was a member of the Motor Car Company, of which his son, Howard Gill, is the president. Mr. Gill was the owner of the first practical automobile to be brought to and operated in Baltimore. He also built and conducted the first auto garage in Baltimore, which was located on the site of the present motor car company at Maryland and Mount Royal avenues.

C. R. Mabley, who last year was manager of the importers' show at Madison Square Garden, and for many years identified with the automobile industry, is now associated with the American Motor Car Manufacturers' Association in connection with the show which opens in Grand Central Palace, New York City, on New Year's eve.

Richard Bacon, Jr., who, as manager of the Cleveland branch in Chicago, became well known to the trade, has been appointed sales manager of the Haynes Automobile Company, with headquarters at Kokomo, Ind. Mr. Bacon succeeds C. B. Warren who is now representing Stearns interests in Western territory.

Guy Vaughan, the well-known racing driver and mechanical expert of Wyckoff, Church & Partridge, New York City, will marry this week Miss Helen Knapp, a daughter of Mr. and Mrs. John A. Knapp, of New Rochelle.

A. N. Jervis, familiar to the trade as a writer of automobile topics, has again been appointed press agent of the automo-

bile show to be held in Madison Square Garden under the auspices of the Licensed Association in January.

J. E. Garnett, of the Monarch Motor Car Company, who has been in charge of Wichita, Kan., branch, has been transferred to Kansas City, Mo., and R. R. Hayes appointed as his successor.

E. Percy Noel and Temple Emery, Jr., formerly engaged in automobile and trade journalism, have joined forces in the establishment of the Motor Press Bureau at 304 N. Fourth street, St. Louis, Mo.

C. F. Kimball, of C. P. Kimball & Co., Chicago, the well-known body-builders, is rapidly recovering from the recent illness which overtook him in Paris. He sailed for home September 26.

John Dorr, formerly with the Buick New York agency, is now assistant manager of the New York branch of the Everitt-Metzger-Flanders Company.

F. L. Thomas, who has been acting manager of the Franklin Company branch at 1450 Michigan avenue, Chicago, has been made permanent branch manager.

OMAHA HOUSE IN AUTO TRADE.

OMAHA, NEB., Sept. 28.—The Baum Iron Company, of this city, one of the largest and oldest concerns in the West engaged in the heavy hardware and carriage supply trade, has entered the automobile industry. It has just added to its business a new department, devoted exclusively to automobile supplies and accessories. At the head of the department is Eugene De Prez. Mr. De Prez is widely known to the motor car industry as the former secretary and manager of the Neustadt Automobile and Supply Company, of St. Louis.

The Baum Iron Company will give to its new department the advantage of branches in several cities and of a force of some 25 traveling salesmen, who will push the goods handled by the new department.

NEW TRADE PUBLICATIONS.

The Willard Storage Battery Company, Cleveland, O.—Electricity has occasionally been used for automobile headlights and sidelights, but hitherto always with carbon filament bulbs. The advent of the tungsten lamp now makes it possible to electrically light an automobile very economically, as this type consumes less than one-half the energy of the usual carbon lamp—that is, about 11-14 watts per candle-power to 3 to 31-2 watts for the carbon type. The filament in the low-voltage tungsten lamp is very strong and its shape is well adapted for use in automobile lamps; being made of heavy metal wire it will stand vibration without injury. Five sizes of tungsten lamp bulbs, ranging from 4 to 25 candle-power, are listed in the Willard Storage Battery Company's booklet, as well as two sizes of lighting batteries, three sizes for ignition, and a set of wire, switches, etc.

Niles-Bement-Pond Company, New York City.—The results of fifty years' experience in the building of boring mills is shown in this catalogue, which describes the product of the Niles Tool Works, Hamilton, O. A dozen sizes of mills are listed, from the comparatively modest 30-inch size to monsters of 20-foot swing. The latter, of course, are hardly applicable to automobile construction. The small sizes are specially adapted to heavy chucking work and offer many advantages for the rapid production of duplicate parts. Many conveniences, such as quick-change positive gear feeds, automatic feed stops and quickly operating back gearing, have been provided for in the design. All parts have been proportioned to take full advantage of high-speed tool steels. The catalogue is illustrated by a large number of photographs of the various sizes and types of mills, and is a handsome piece of work.

The Winkley Company, Detroit, Mich.—Winkley oil hole covers and grease cups are known wherever automobiles are used and need no recommendation. A novelty,

however, appears in the line of pressed metal grease cups. Many advantages are claimed for these over the ordinary types, as sheet metal permits lightness in construction with much greater strength. Castings are frequently spongy and are subject to flaws and sand holes. Pressed metal produces a perfect thread, both for the cap and for the stem. In placing them in position there is no danger of twisting off the stems and later no danger of their being broken off by accident while in use. The latest Winkley catalogue describes and lists these cups as well as the old lines of oiling devices.

F. A. Brownell Motor Company, Rochester, N. Y.—The Brownell automobile, marine and stationary motors are made in ten sizes of from 14 to 150 horse-power, with four, six and eight cylinders. There are two models, known as "plain top" and "overhead." The former has all valves in the head, actuated by push rods and walking beams from a camshaft in the usual position; but on the "overhead" type the camshaft is carried on the cylinder heads and actuates the valves directly. The Brownell catalogue describes and illustrates the various sizes and also gives a table of dimensions—a convenience many catalogue makers omit. The motors all appear to be solidly constructed and well adapted for heavy service.

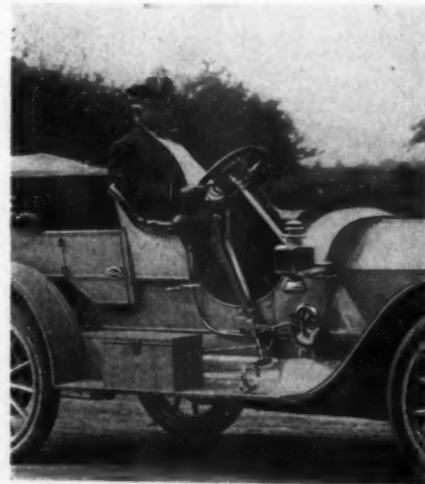
Anderson Forge & Machine Company.—This company has just brought out a new catalogue containing over 500 detail drawings of forgings which are used in the automobile trade. They feel that this will help many manufacturers in their designing rooms and be a great time saver in making rough estimates for new work. A copy of this catalogue will be mailed to any manufacturer on request to the company in Detroit, Mich., or the National Sales Corporation, 296 Broadway, New York City.

Gram-Logan Motor Car Company, Bowling Green, O.—This company's folder gives advance information of three models of commercial cars—a three-ton truck, a one and one-half-ton truck and a delivery wagon. The large car is equipped with a 40-horsepower water-cooled motor and the two small cars with a 20-horsepower air-cooled one. Bodies are interchangeable, and several styles are carried in stock to select from.

National Brake and Clutch Company.—A new booklet has just been put out by the National Brake & Clutch Company, illustrating the many uses of the cork insert. They show cuts of fifty different ways in which the cork insert has been applied by them, and of special interest to the automobile user are their cork inserts for brakes and clutches as applied to the automobile.

New Goodrich Price List.—The B. F. Goodrich Company has issued its new price list of tires and rims for the year ending July 15, 1909. The company is also sending out with this new list a pamphlet, "The Light of the Glidden Tour," giving some of the experiences of the tourists who used Goodrich tires.

H. H. Franklin Mfg. Co.—This company has just issued its advance catalogue describing its 1909 models, the features including the auxiliary exhaust, concentric valves, spring suspension and transmission.



William F. Wright, Springfield, Mass.

The well-known vice-president of the Knox Automobile Company is an ardent autolot, and a driver of national reputation, having participated in several A. A. A. Tours for the Glidden Trophy.

INFORMATION FOR AUTO USERS

Auto and Yacht Fire Extinguisher.—Many occurrences are on record of serious damage being done to automobiles and yachts because of fires which might have been greatly reduced if the owners had had the use of some good chemical fire ex-

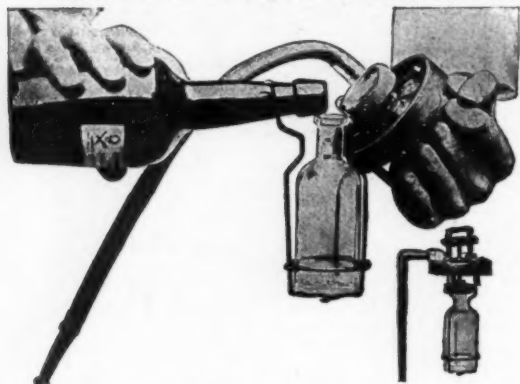


FIG. 1—SHOWING METHOD OF FILLING.

tinguisher. The Syracuse Chemical Fire Extinguisher Co., of Syracuse, N. Y., is selling a hand chemical extinguisher which it claims will instantly put out a gasoline or any other fire around an automobile. It has been designed especially for use on cars or yachts so that neither water nor rough roads can render it useless. Fig. 1 shows the bottle holder which makes it unnecessary to run the risk of burning the hands while recharging, and takes less time. This company claims to have eliminated in this new model all of the unreliable and impractical features which many chemical extinguishers possessed. There is no loose stopper to become corroded, no bottle to break, or plunger to operate; any of which might render the extinguisher unreliable. The holder, shown in Fig. 2, being adjustable, can be readily fitted to any car or yacht.

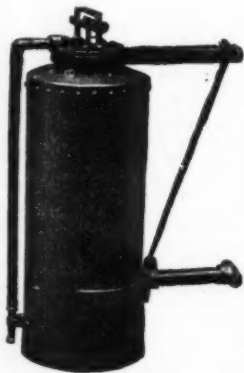


FIG. 2—EXTINGUISHER AND BRACKET.

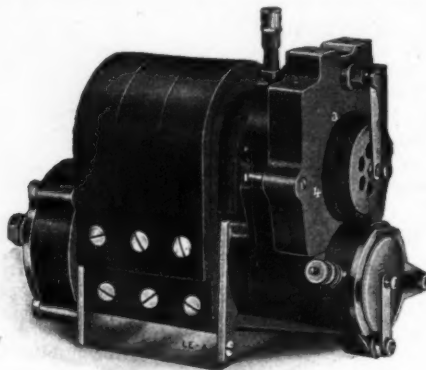
New Gasolene Can.—The Dover Stamping & Manufacturing Company, of Cambridge, Mass., has brought out an extra heavy galvanized can especially made for gasoline, which it claims has features making it very adaptable to the use of automobile owners. The distinctive point about this can is the facility with which the gasoline may be poured without spilling, as the spout is made purposely very large. A tight screw cap is not only provided on the top of the can, but one is fitted on the end of the spout to prevent evaporation.



NEW DOVER CAN.

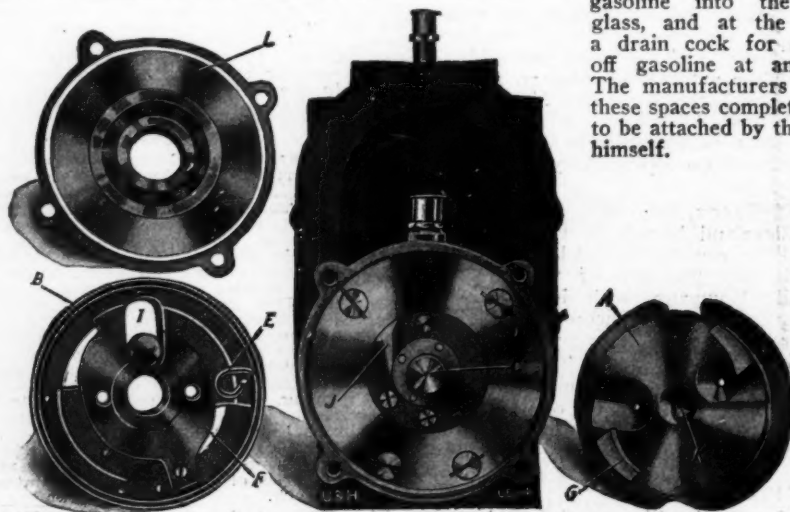
Unterberg and Helme Magneto.—The magneto shown herewith, manufactured by Unterberg and Helme, Darlach, Germany, is distinguished by a unique starting device which appears to obviate the difficulties often experienced in using a magneto without an accessory battery system. With this device, the speed of rotation for the necessary half-turn of the starting crank has no effect whatever upon the quality of the spark produced, and back-firing is made impossible by an automatic retard of the timing.

The illustration shows the starting device disassembled. *L* is the cover plate.



U. & H. MAGNETO COMPLETE.

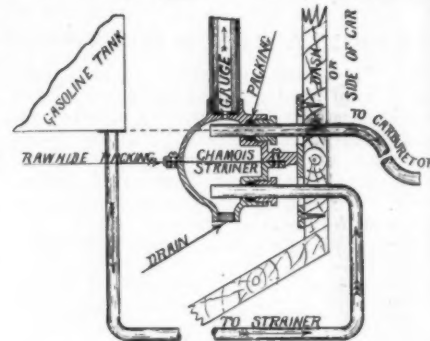
A, the steel driving disc, has been slipped off of the armature shaft *C*, on which it is normally free to turn; the bronze disc *B*, secured to the armature shaft, has also been dismounted. This disc *B* carries a coil spring around its circumference, one end being attached to *B* and the other to a pin on *A*; thus *B* and the armature are forced to follow *A*. The steel ball *H* is loose in the slot *I*. This ball projects behind *B*, and, as *B* rotates, strikes the fixed cam *J*. The other side of the ball is held up firmly against the obstruction by the disc *A*, so that *B* is blocked and cannot turn further. *A*, however, continues to rotate, putting the connecting spring under an increased tension, until the radial depression in *A* comes opposite the steel ball. The ball immediately drops into the depression, freeing *B*, which turns with a sudden jerk until it catches up with *A* again. Of course, the armature is arranged so that



STARTING DEVICE OF UNTERBERG & HELME MAGNETO, DISASSEMBLED.

the short, swift movement of *B* carries it over the sparking point, and generates as strong a current as if the magneto was turning at its maximum speed. The arrangement is also such that this sparking point is past the dead center of the crank. When the motor reaches a speed of 60 r.p.m., the ball is held by centrifugal force in the outer part of the slot *I*, and no longer engages the cam *J*. The drive is then direct and constant. The magneto itself is of the usual type with double armature winding, generating a high-tension current without the use of a separate spark coil. The timer, condenser and distributor are mounted on the rear end, and, with a few exceptions, follow the standard design. The "U. & H." magneto is handled in this country by the J. S. Bretz Company, Times Building, New York.

Gauge and Strainer Combined.—The Central Brass and Fixture Company, of Springfield, O., has placed on the market the Puritan combined gasoline gauge and strainer, which should be useful to owners of automobiles as a means of keeping their gasoline supply to the carburetor free from dirt and water, besides showing the driver



PURITAN GAUGE AND STRAINER.

at all times the amount of gasoline left in the tank. The gauge glass has a red ball which floats on the top of the column of gasoline showing the height in the tank at a glance, as the length of the gauge is made according to the depth of the tank on each car. In the sectional drawing is shown a general arrangement with gasoline connections made. This clearly shows the route of the gasoline from the tank, through the chamois strainer, and on to the carburetor. At the top of the strainer compartment is a small opening for the gasoline into the gauge glass, and at the bottom a drain cock for drawing off gasoline at any time. The manufacturers furnish these spaces complete, ready to be attached by the owner himself.